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Michael Boich Of Radius:

"Steve Jobs predicted the death of desktop publishing at the very first Seybold show where we introduced our first product. Almost every application has some features that help you produce a beautiful document."

See story beginning on page 68

PUBLISHING IN THE '90s

- Seybold Conference Preview: Color, Multimedia And More
- Who Needs Desktop Publishing?
- DTP For The DOS-Based Office
- Wordflair: Document Preparation For The ST

MICROPROCESSOR PATENT BOMBSHELL:

"Until now, almost everyone thought that Intel was the developer and sole patent-holder for the microprocessor based on its 1971 patent. However, Gilbert Hyatt's patent dates to a year before that."

See page 14

BMUG REPORTS FROM BOSTON:

"The really exciting things at the Boston Expo were not on the show floor, but in the numerous hospitality suites in surrounding hotels. Entrance was by invitation only, with the honored guests put under non disclosure, and then fed digital goodies."

See page 191

THE WELL-RUN BUSINESS:

"In every computerized business, the proverbial ounce of prevention starts with somebody saying 'That's MY job.' That person is the System Manager."

See page 42

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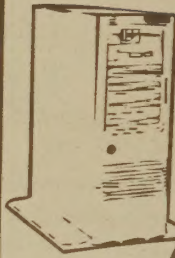


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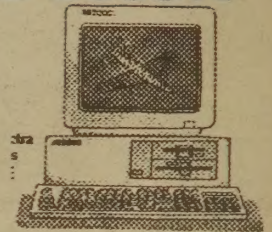
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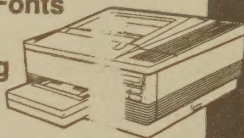
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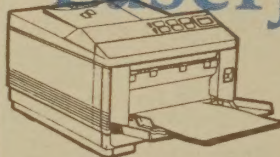
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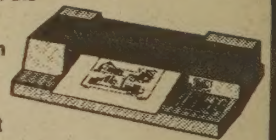


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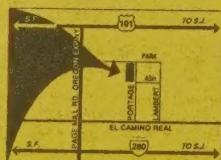
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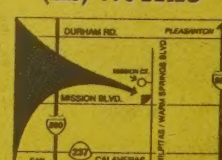
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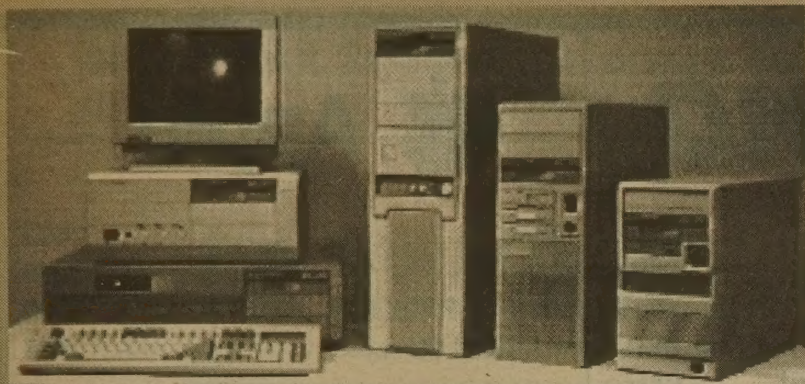
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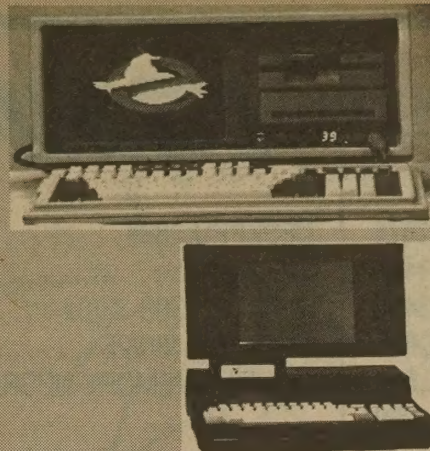
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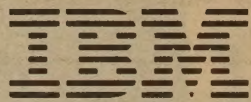
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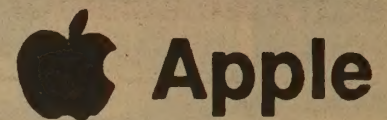
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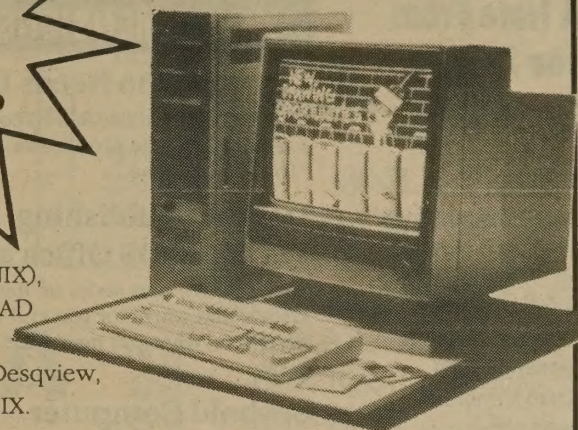
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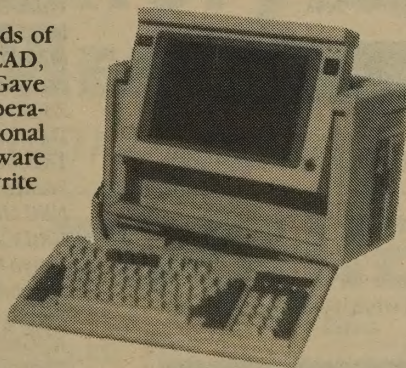
1983 to 1990

Thousands of computers sold. Did testing on thousands of computers: software, hardware, networking, UNIX, CAD, engineering software, artificial intelligence software. Gave workstations to software houses like Santa Cruz Operations (SCO) to exhibit their UNIX software at international shows such as Uniforum in Washington, DC. Software developers in UNIX, such as Tolerant Systems, who write software for AT&T, have workstations from us.

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A Note From The Editors

As we go to press, we're contemplating a world in which "publishing" has taken on dimensions far beyond anything we envisioned when we started doing this magazine with typewriters and Xacto knives six years ago.

In back-to-back events in mid-September, NeXT and Xerox unveiled some mind-boggling tools for "interpersonal computing." Much of what they were talking about was, in one form or another, publishing—distributing information, making it accessible and useful to people, in a workgroup, a company, an audience. But, as Xerox VP John Seely Brown pointed out, "Linear documents force a linear view of the world." We've come a long way from PageMaker 1.0 with full-motion color video in your email from NeXT. Xerox promises on-the-fly translations of your documents as you mail them to your Paris office. More next month, but in the meantime it's safe to predict that the two companies will be getting more attention than usual at Seybold...

NOTE:

Due to technical difficulties, our regular User Group/BBS listings will not appear this issue. They'll be back next month, and all listings will be extended one month. We apologize for the inconvenience.

—Editors

NEW DIMENSIONS IN PUBLISHING

Update: Who Needs DTP? By Paul Hoffman 22

Paul Hoffman (whose Radius cover story explores another aspect of this issue) discusses the promise vs. reality of what Jean-Louis Gassée dubbed "The Trojan Niche."

Desktop Publishing

For The DOS Office By Birrell Walsh 37

First of a two-part series on hardware and software choices for creating a system that works for you and won't be obsolete by COMDEX—what you need now, what you need later, and what kind of planning you should be doing.

Seybold Computer

Publishing Conference Preview 83

Coming to the San Jose Convention Center next month, this conference features sessions and exhibits showcasing state-of-the-art publishing technology and its practical applications.

Voice Hijacks The Information Age:

The Uncharted World Of Audiotex By Brock N. Meeks 86

Publishing in another dimension, audiotex has bypassed the user interface problem entirely by adopting a tool everybody already knows how to use—the telephone. And in the last few years, the field has become a marketing and information goldmine.

BUSINESS SOLUTIONS

The System Manager By Mikael Blaisdell 42

For the DOS- (or Mac-) based office, the person who supervises your network doesn't need to be a wizard so much as have an intelligent sense of what needs to be done and the responsibility to do it. Here are some guidelines.

UNIX By Bennett Falk 50

Norton Utilities for UNIX—or, rm doesn't have to be forever.

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Remote access products for teaching, troubleshooting, and performing other system administration tasks without leaving your desk.

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TI Goes Portable By Ed Kahn 94

Texas Instruments makes its first entry into the laptop marketplace with three compact, modular models.

Windows 3.0: Basic Facts

And Fictions By Lenny Bailes 103

Beginning a series on Microsoft's latest release and what it will and won't do to change the way DOS users compute.

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Dvorak's Last Column By John C. Dvorak 246

Dvorak nails the coffin of the clunky portable.



Cover Story:

Radius: Publishing And Beyond By Paul Hoffman ... 68

Cover and contents photos: Michael Jay

Radius announced its first product, a full-page display, at the first Seybold Publishing conference. Since then it's expanded beyond desktop publishing into color and multimedia systems, launched its first PC products, and had its first public stock offering. Executives Michael Boich, Andrew Singer and Steven Holtzman put it all in perspective.

Status Report:

Macs At MicroTimes By Mary Eisenhart 184

When we started this magazine, desktop publishing was just a gleam in some crazed software evangelist's eye.

The problems we have today were unimaginable six years ago. Probably because the tools we're using were unimaginable, at least to us. We're not planning on going back.

Atari ST By David Hawkins 202

Document preparation with Wordflair.

PRODUCT SPOTLIGHT

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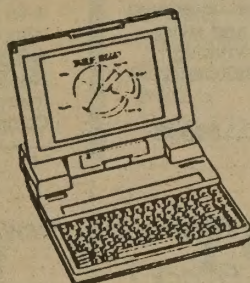
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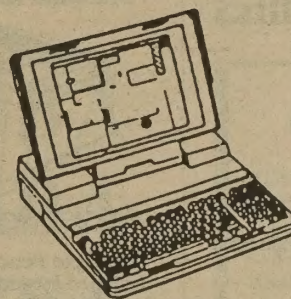


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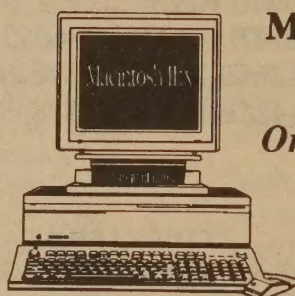
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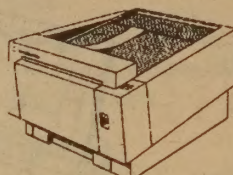
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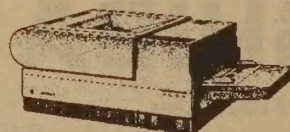
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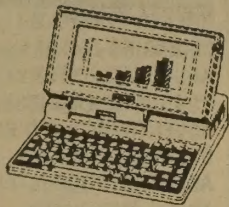
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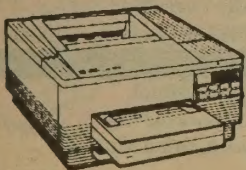
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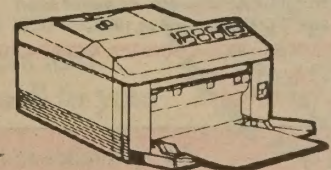
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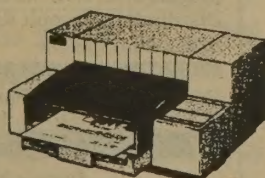
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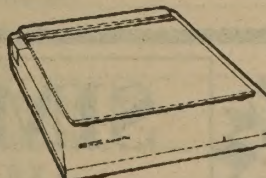
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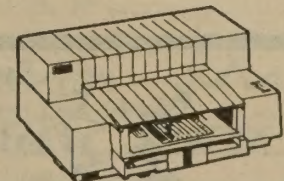
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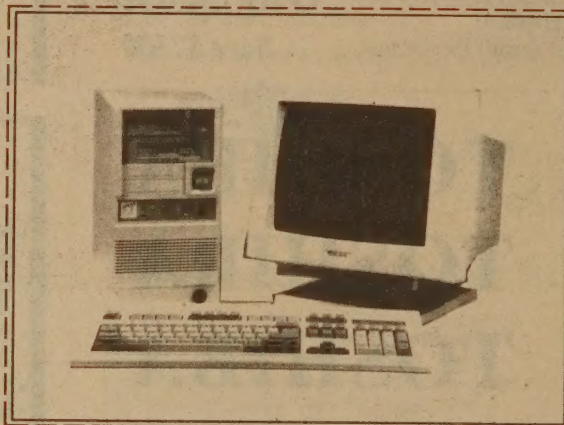
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100 MB H/D
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2S/1P
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- Maxtor XT-8760E Hard Drive
- ESDI Controller
- 4 MB expandable to 8 MB
- 1.2 or 1.44 MB F/DD
- I/O Interface (2S/2P)
- Tower Case
- Real Time Clock w/CMOS set up
- Battery Back-up
- Focus 2001 Keyboard w/Cover
- 230 W Power Supply
- 16 Bit 512k Display Card
- VGA 1024x768 Monitor

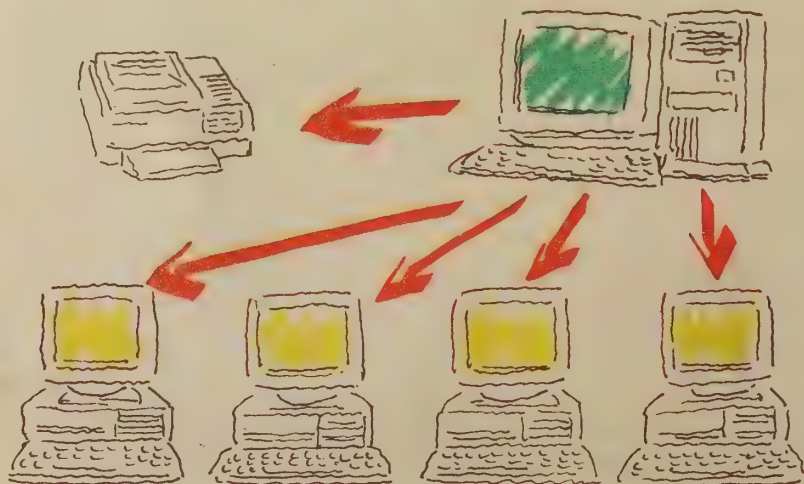
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- ESDI Controller
- 4MB expandable to 8 MB
- 1.2 or 1.44 MB F/DD
- I/O Interface (2S/2P)
- Tower Case
- Real Time Clock w/CMOS set up
- Battery Back-up
- Focus 2001 Keyboard w/Cover
- 230 W Power Supply
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- Mono. card

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386-SX 16 MHZ w/1 MB RAM

- Landmark=22, SI=19
- 1 MB RAM Expandable to 8MB
- 1.2 MB or 1.44 MB F/DD
- I/O (2S,1P,1G)
- Focus 2001 Keyboard w/Cover
- Socket for 387-SX
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1985-Introduced our 286 AT motherboard to reach new markets.

1986-Opened our first U.S. sales office in San Jose, CA under the MICRILINK systems logo.

1987-Introduced our 386 25 MHz AT mother board. Opened our second sales office in San Francisco.

1988-Our production of motherboards peaked above 500,000 units.

1989-Introduced our 386 33 MHz w/64k cache motherboard. We began mass production of a new 486 25 MHz motherboard.

1990-Relocated our San Jose warehouse

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- Hitachi 4319AS 19" 2045
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- Nanao 9070U 16" 1195
- NEC 3D 14" 615
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- AMT Intelli-Plot, A-C 1275
- Roland 300AR, A-D 3075
- Roland 400AR, A-E 3750

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- I/O 1-S 1-P
- 200MB IDE H/DD

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- 386 25MHZ
- 1MB RAM
- 1.2MB Teac F/DD
- I/O 1-S 1-P
- 100MB IDE H/DD

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386-25 MHz TOWERSYSTEM w/64K CACHE

- Landmark=38, SI=32
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- I/O (2S,1P,1G) or (2S,2P)
- 230 W Power Supply
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- 105MB Conner Hard Disk

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386-25 MHz TOWERSYSTEM w/1MB RAM

- Landmark=35, SI=30
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- Socket for 387
- 1x32, 6x16, 1x8 bit slots
- 200 W Power Supply
- Focus 2001 Keyboard w/Cover
- 3.3 or 4.01 DOS Included
- Support DOS, OS/2, Unix, Xenix
- I/O (2S,1P,1G) or (2S,2P)
- VGA Monitor 1024x768
- 16 Bit 512k Display Card
- 105MB Conner Hard Disk

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INDUSTRY INSIGHT

BY PAUL
HOFFMAN

MICROPROCESSOR PATENT AWARDED TO INDIVIDUAL INVENTOR

Gilbert Hyatt, an engineer living in La Palma, California, was awarded a patent on a very basic microprocessor after a 20-year application process. The effects of the patent are not yet known, but they could be very wide-ranging.

Until now, almost everyone thought that Intel was the developer and sole patent-holder for the microprocessor based on its 1971 patent. However, Hyatt's patent dates to a year before that.

There are many reasons why the patent was not granted until now, mostly due to Hyatt's insistence on handling the patent himself without attorneys. The patent is only valid from the day that it was issued, so Hyatt cannot attempt to get back royalties for microprocessors. However, it is likely that he could get royalties for many microprocessors manufactured after July 17, the date of his patent.

Many lawyers feel that the patent can withstand the inevitable lawsuits since he re-filed it seven times during the 20-year process. That means that the US Patent Office has reviewed and scrutinized the patent eight times and is suitably impressed with its merits to issue him the patent. Often, patents that go through the re-filing process come out much stronger and easier to defend, according to many lawyers.

Hyatt has said that he will seek licensing fees for the patent, #4,942,516 called "Single Chip Integrated Circuit Computer Architecture", but has not shown any predatory interest in trying to get huge sums from microprocessor manufacturers like Intel and Texas Instruments. Many smaller manufacturers are likely to agree to the fees immediately,

although others may wait for the reaction of industry giants such as Intel and IBM to Hyatt's requests. Hyatt invented the chip while working with his now-defunct company, Micro Computer Inc., in 1968. He holds over fifty other patents in many fields.

IBM ADDS PRODUCTS TO MINICOMPUTER AND MAINFRAME LINES

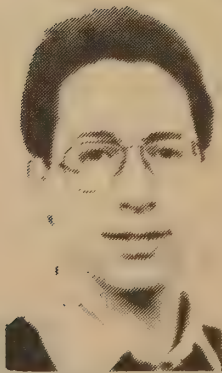
Hoping to lure back disgruntled clients, IBM introduced new low-cost computers in its AS/400 line and announced new, faster mainframes. The new AS/400 systems have built-in Ethernet and Token-Ring support and are aimed at people needing a file or communications server for a cluster of PCs. At the same time, IBM released a new version of OS/400, the operating system for the minicomputers.

The mainframe announcement capped years of speculation on the new systems, code-named Summit. The very-high-end mainframes are more powerful than IBM's current top of the line, the 3090. IBM used its extensive research into multi-processor computers to optimize the performance of the systems, some which include six parallel CPUs. The new mainframes use fiber-optic cables to pass information back and forth between the high-speed disk storage devices.

BORLAND MUST FIGHT LOTUS IN BOSTON

A federal court judge dismissed Borland's request to move Lotus's lawsuit against it to California. Borland had hoped to get the case heard locally both to reduce costs and because Lotus's successful case against Paperback Software has no precedent in the local

Until now, almost everyone thought that Intel was the developer and sole patent-holder for the microprocessor based on its 1971 patent. However, Hyatt's patent dates to a year before that.



Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

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- ☐ 101 Enhanced Keyboard
- ☐ 220W Power Supply

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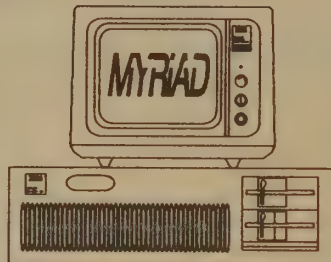
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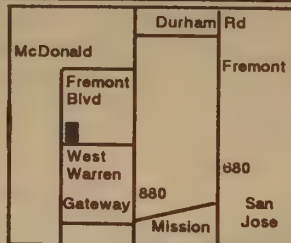
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NEWS & VIEWS

federal courts. Borland said that although they're disappointed, they do not feel that having to fight in Boston will weaken their case. Borland is continuing to advertise arguments that Quattro Pro does not infringe on 1-2-3 due to its many interfaces and more advanced features.

AMD CAN CALL ITS CHIP "80C287"

Ruling that chip names are not protected by law. Federal District Judge William Ingram ruled that AMD's new 80287-clone chip could be called "80C287" and that Intel does not have exclusive rights to the chip number.

Intel's case against AMD also claims that AMD cannot use the microcode that Intel licensed to it for the math coprocessor, although Judge Ingram said he will not rule on that portion of the suit until sometime next year.

While ruling that AMD could call its

Many industry analysts assume that at least two companies will come out with 80386 clones in the next year... Companies may assume that the case sets precedent so that other manufacturers can use the "80386" moniker, but they may also want to stay as far from Intel's names as they can...

\$99 chip "80C287", Judge Ingram also ruled that AMD could not use the terms "genuine Intel equivalent," "100% Intel compatible," or "strictly compatible" due to speed differences between the AMD and Intel chips in their various configurations.

Many industry analysts assume that at least two companies will come out with 80386 clones in the next year; it will be interesting to see whether or not those clones use the same numbering

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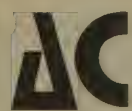
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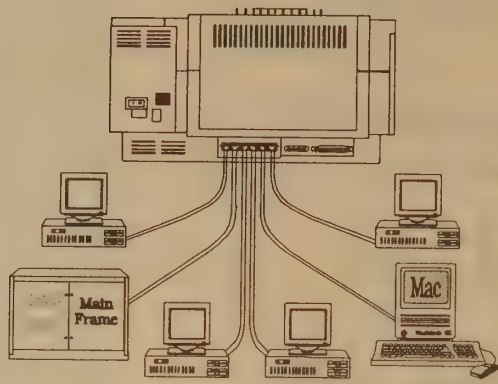
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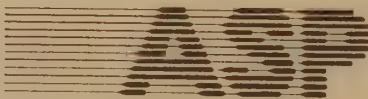
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NEWS & VIEWS

While UNIX has been making headway on high-end PCs, the standard for making sure that applications run on all versions of 386-based UNIX has started to erode.

as Intel. Companies may assume that the case sets precedent so that other manufacturers can use the "80386" moniker, but they may also want to stay as far from Intel's names as they can—both to make their products look better and to give Intel one less thing to sue them over.

Since there will certainly be few 80386 clones, manufacturers do not need to worry too much about confusion. In the last few months, however, Intel has taken out large advertisements to convince buyers to insist on Intel chips in their computers. This may be aimed more at Motorola than at potential clone makers, but the effect might be to make buyers worry about non-Intel chips.

INTEL, AT&T, AND SCO'S NEW UNIX STANDARD

While UNIX has been making headway on high-end PCs, the standard for making sure that applications run on all versions of 386-based UNIX has started to erode. To stop that erosion, the three major players in the market have agreed to beef up the compatibility standard so that new applications can run on a wider variety of hardware.

The Intel Binary Compatibility Specification (iBCS), written in 1988, set down most of the rules for how to make applications run under UNIXes from SCO and AT&T, the two largest players in the market. However, there were many portions of the specification that were unclear or missing, and application vendors have discovered that they still needed to write different versions of their applications for different versions of UNIX. With iBCS edition 2, due from Intel later this year, those differences should be cleared up.

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Auto dial/delayed dial/re-dial	•	•	•	•
Selectable # of rings/retry attempts	•	•	•	•
Date/time/# of pages log/phone log	•	•	•	•
Background operation	•	•	•	•
Automatic group data base	•	•	•	•
Broadcast transmission	•	•	•	•
Automatic broadcast	•	•	•	•
Multiple fax transmission	•	•	•	a
Multiple group/job transmission/scheduling	•	•	•	•
Automatic translation prior to sending	•	•	•	•
TIFF to FAX	•	•	•	•
ASCII to FAX, PCX to FAX	•	•	•	•
FAX to PCX	•	•	•	•
FAX to TIFF	•	•	•	•
Epson/HP LaserJet support w/ delayed print	•	•	•	•
150 ¹ DPI, 300 ² DPI	1,2	2	2	1,2
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Any scanner-created .TIF or .PCX files	•	b	•	•
Auto-integrate letterhead/signature	•	•	•	•
Dynamic file merge	•	•	•	a
Cross-directory file merge	•	•	•	•
Gray scale or dithering	•	•	•	•
Transmit compressed fonts	•	•	•	•
Compressed video-100 characters	•	•	•	•
Selectable color palette: foreground/background	•	•	•	•
Graphics Editor	•	•	•	•
Text Editor	•	•	•	•
Auto-save faxes for repeated use	•	•	•	•
Mark unlimited multiple faxes for auto-printing	•	•	•	•
Mark unlimited multiple files for auto-sending	•	•	•	•
Mark multiple faxes auto-display	•	•	•	•
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On-screen renaming of files	•	•	•	•
TSR required for background operation	•	•	•	•
Manufacturer suggested retail	\$195	\$995	\$699	\$195

Need we say more ?

Information supplied by manufacturer data sheets, customer support departments, and the results of testing as completed and recently published by INFOWORLD, August 6, 1990; PCMagazine, August 1990; Adtech Micro Systems engineering department, June-August, 1990.

a. only in sequential order b. none

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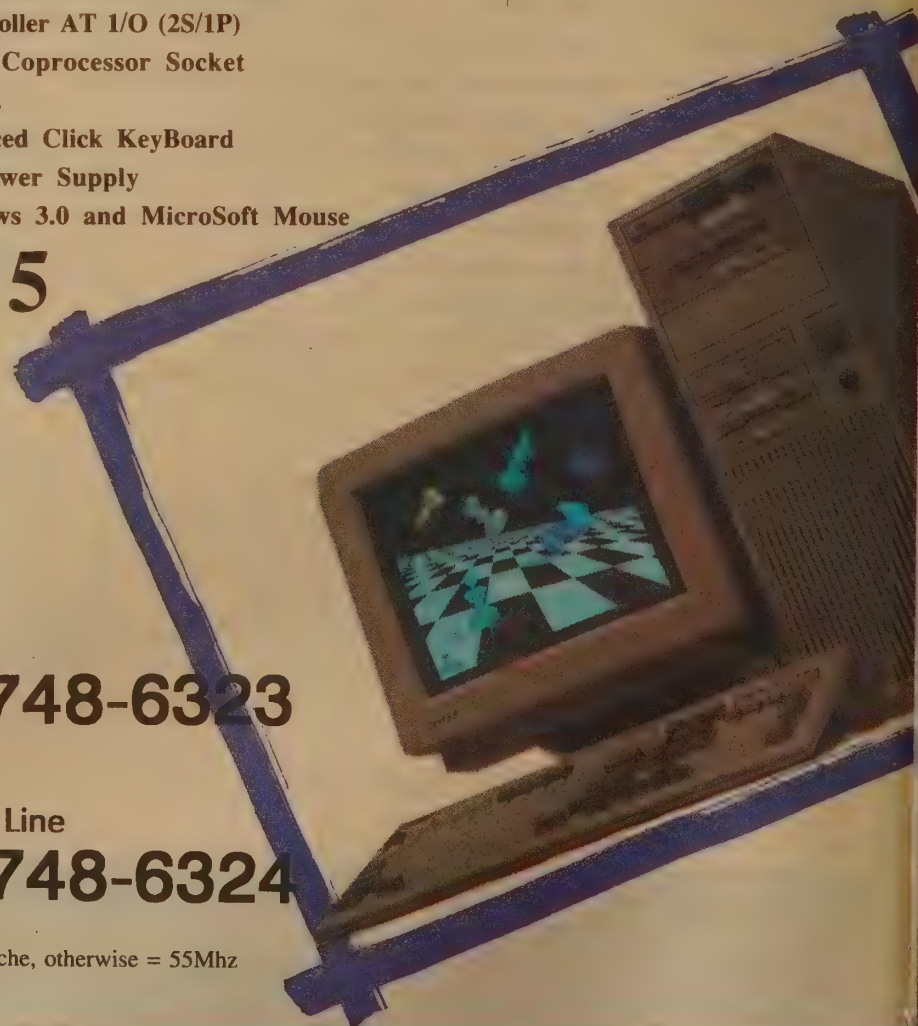
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* Only With 256k Cache, otherwise = 55Mhz

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LANDMARK=34MHz

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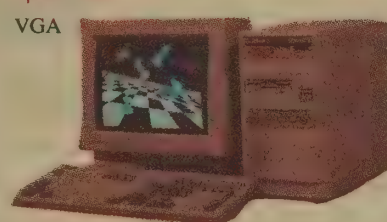
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MONOVGA

\$1730

VGA



386SX-16MHz 40MB & DUAL FLOPPY

LANDMARK=21MHz

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- IDE Controller
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- MGP or 16 Bit VGA Card
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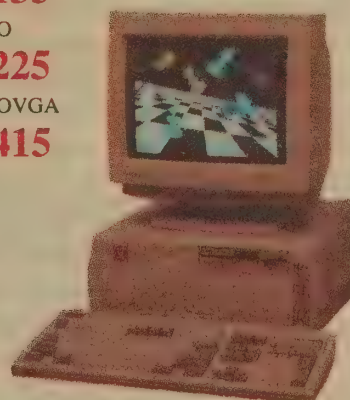
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VGA



286-12MHz w/40MB

LANDMARK=15.6MHz

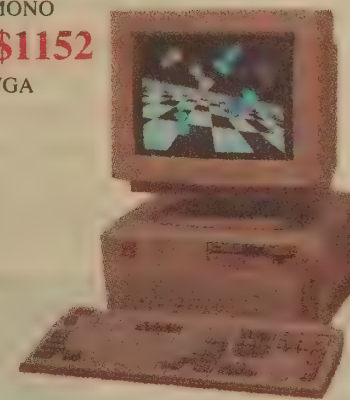
- 1MB RAM Exp to 4MB
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- 12MB or 1.44MB TEAC Floppy Drive
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- 200 W Power Supply
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\$875

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VGA

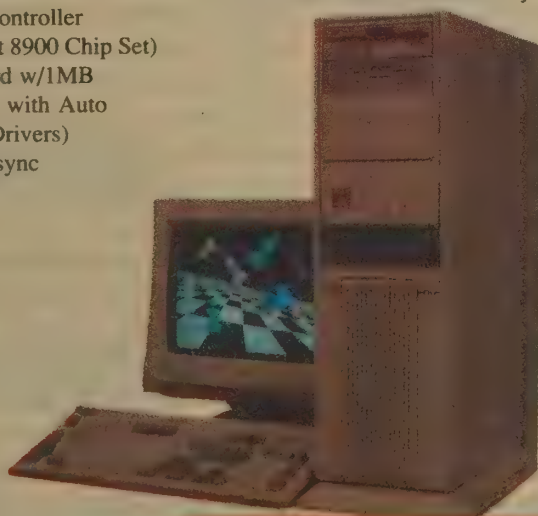


MLS 486-25Mhz w/128k Cache 350MB ESDI Hard Disk Seiko 1440 Multisync

LandMark Speed = 117MHz MIPS = 11.1

Standard Configuration:

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Update: Who Needs DTP?

When desktop publishing was the "next big thing," it seemed so exciting. Everyone could make newsletters and presentations by themselves without having to send their material out to a typesetting shop. No more hassle with glue guns and t-squares for laying out text and graphics. Apple, the inventors and primary promoters of the term, made it seem so easy and cheap.

The first DTP tools were indeed easy to use, especially for Mac users. All that was really needed to take the first step towards freedom from typesetting was a PostScript laser printer and some new fonts. As it turned out, PostScript was pretty much unnecessary to most beginning DTP users, since they often used only the predefined sizes of text that came with their computers. Even though it was unnecessary, it proved a godsend for the few times that you needed an odd-sized font. DTP migrated to PCs as font technology for

the Hewlett-Packard compatible printers improved.

Layout software became the rage as the ultimate software tool. Aldus made its fortune on giving everyone the ability to precisely lay out their text in formats ranging from magazine pages to books to newsletters. This, however, became DTP's first stumbling block: layout programs are not easy to learn if you don't know much about design. It's one thing to make a flyer with a word processor and print it nicely on a laser

printer, but quite another to learn enough about layout to be able to understand the parts of a layout program.

Still, the DTP market marched forwards, sucking in more people every day. New hardware products such as large monitors made it easier to see whole pages at a time and super-high resolution laser printers brought the quality of the output up to typesetting standards. By 1988, people doing color work started to get the tools they needed, and

many magazines started being produced in-house. By early this year, it was estimated that some five million people had become desktop publishers.

Until recently, no one stopped to ask why that many people would want to get so intimately involved with desktop publishing. Sure, it was not hard, but that isn't a good enough reason. In the dark ages of microcomputers, everyone used a word processor, and it became clear that there weren't really that many good writers (or even good spellers) using computers. In the middle ages, everyone started using spreadsheets, and it became clear that there are not many people organized enough to make complicated spreadsheets that were useful. Now it is becoming clear that, without some training, not many people can make good-looking pages even with the best of DTP software and hardware.

Lack of good design skills or time to learn a layout program should not deter most users from wanting to do some form of publishing on their computers. After all, laser printers are still easy to use, and there are now even more fonts to use on them. To the credit of the software industry, a huge percentage of the software available for PCs and Macs now makes very good use of the font and printer technology, so that even mundane applications like database managers can put out good-looking ("published") documents without forcing you to take the ugly output and force it through a layout program. The most popular Mac programs such as MS Word give you more choices than most people can handle for publishing options, and almost every Windows application does the same.

The question remains: who should learn more about DTP layout programs and why? Some of the "tricks" of DTP are, in fact, simple. The new book from Peachpit Press, *The Mac Is Not a Typewriter*, lists dozens of easy-to-apply tips that can help even the most rudimentary of typists make much better documents with any word processor. Most of the hints in the book apply equally well to the PC. With such guidance, most people's output will look good enough to the untrained eye that there is no need for layout programs. If most people can get away without "real" layout and all the jargon that goes with it, that leaves the rest of the field to the professionals.

Of course, design professionals should all be doing computer-based layout by now.

Learning good publishing design skills is like learning to be a fine artist: lots of us would love to have the time to do it, but few actually are much good at it.

There is really no reason why everyone who works daily with type and formatting isn't using DTP. (Humorously, many computer book companies still use standard type and paste-up methods, even though they make a significant amount of money selling DTP books.)

There is certainly a significant need for people who can take word-processed documents and turn them into laid-out pages. A new field will emerge: document formatters. This has always been the job of design shops, but design shops usually did everything from soup to nuts. Now that many companies have easy access to the tools to edit the text and even format the characters with bold, italics, and so on, design shops may be reduced to making layout templates and pouring the prepared text into them. The customer could then see how everything looked and make any desired visual changes. The design shop would then make a final and print it, probably on an in-house high-quality printer.

Thus, not everyone needs to be on top of the DTP field. For simple brochures and reports, the top word processors on the PC and Mac can fill most of the DTP needs. Those that can't be filled should be able to be taken to someone with the requisite design talents and tools. Learning good publishing design skills is like learning to be a fine artist: lots of us would love to have the time to do it, but few actually are much good at it. The computer industry should stop pressing people to learn DTP but make sure that they know where they can find it. ■

By 1988, people doing color work started to get the tools they needed, and many magazines started being produced in-house. By early this year, it was estimated that some five million people had become desktop publishers.

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110 MB	1794	1893	2164	2264

486-25 MHz 64K CACHE

LANDMARK = 115

- 1 MB RAM EXPANDABLE TO 8 MB
- AMI BIOS
- 1X32 BIT, 5X16 BIT, 1X8 BIT SLOTS
- REAL TIME CLOCK W/ BATTERY BACKUP
- 1.2 MB FLOPPY DRIVE
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65 MB	3134	3234	3504	3604
110 MB	3334	3434	3704	3804

386-25 MHz

LANDMARK = 33

- 1 MB EXPANDABLE TO 8 MB
- SOCKET 80387 & AMI BIOS
- 1X32 BIT, 5X16 BIT, 2X8 BIT SLOTS
- REAL TIME CLOCK W/ BATTERY BACKUP
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- 1:1 2FL/2HD CONTROLLER
- 200W P/W CASE HOLDS FIVE DRIVES
- 101 ENHANCED KEYBOARD

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386-25				
HD	NO MONITOR	MONO	VGA	SUPER VGA
40 MB	1194	1294	1564	1664
65 MB	1294	1394	1664	1764
80 MB	1494	1594	1864	1764

386-25 MHz 64K CACHE

LANDMARK = 43

- 1 MB RAM EXPANDABLE TO 8 MB
- SOCKET 80387 & AMI BIOS
- 1X32 BIT, 5X16 BIT, 1X8 BIT SLOTS
- REAL TIME CLOCK W/ BATTERY BACKUP
- 1.2 MB FLOPPY DRIVE
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- 230W P/W CASE HOLDS FIVE DRIVES
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HD	NO MONITOR	MONO	VGA	SUPER VGA
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65 MB	1494	1594	1864	1964
80 MB	1694	1794	2064	2164

386-16 SX

LANDMARK = 21

- 1 MB EXPANDABLE TO 4 MB
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- REAL TIME CLOCK W/ BATTERY BACKUP
- 1.2 MB FLOPPY DRIVE
- 2 FL/2 HD CONTROLLER
- 200W P/W CASE HOLDS FIVE DRIVES
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386-16 SX				
HD	NO MONITOR	MONO	VGA	SUPER VGA
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65 MB	994	1094	1364	1464
80 MB	1194	1294	1564	1664

286-12 MHz

LANDMARK = 16

- 640K RAM EXPANDABLE TO 4 MB
- SOCKET 287 & AMI BIOS
- 6X16 BIT, 2X8 BIT SLOTS
- REAL TIME CLOCK W/ BATTERY BACKUP
- 1.2 MB FLOPPY DRIVE
- 2 FL/2 HD CONTROLLER
- 200W P/W CASE HOLDS FIVE DRIVES
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286-12				
HD	NO MONITOR	MONO	VGA	SUPER VGA
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40 MB	729	828	1129	1229
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- ESDI 160
- AT Controller Card 49

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- Panasonic 1124 298

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- 2400 Modem 80
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- Keytronic 101 Keyboard 48
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- 386-25 w/ 64K Cache 765
- 386-25/20 650/599
- 386-16 320
- 286-16/12 165/129
- XT 8088 68

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- RGB/EGA 199/310
- VGA Relysis 340
- Super VGA 399
- NEC 3D 589
- VGA 299

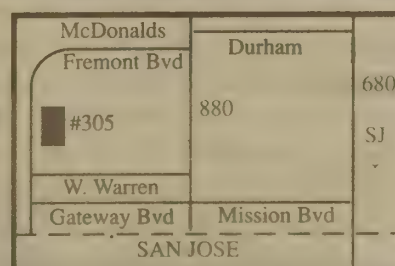
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Letters

ALR REBUTS AST

This letter is in response to an editorial interview that appeared in the last issue of *MicroTimes*, and a comment made by Tom Yuen of AST.

In reading this article it is obvious that Mr. Yuen's comment about the company down the street with three letters that starts with an A is Advanced Logic Research, Inc. Mr. Yuen grossly misstated the number of technical support personnel ALR has as being only five, when in fact ALR has over 25 technical support persons to handle any questions our customers may have. Furthermore, ALR offers regular training classes and programs for dealers that wish to become ALR Authorized Service Centers.

The comment that AST requires 120 tech support people to handle their technical support needs suggests that AST may be running into a relatively high failure rate caused by either quality control or reliability problems with their systems.

ALR's commitment to its customers is backed by a one-year factory warranty, Authorized Service Centers nationwide, and an optional on-site service program from Intel.

Dave Kirkey

Vice President of Worldwide Marketing
Advanced Logic Research, Inc.

Irvine

AUTODESK AND VC: THE OTHER SIDE

John Walker and his associates have performed spectacularly in developing a unique software product and building Autodesk into a highly profitable company.

John Walker's article ["Autodesk Meets The Venture Capitalist," #72] on his contacts with me is correct but not complete. He has apparently forgotten other discussions we had in 1982. In my first talk with him I said Autodesk could most probably survive without outside capital and that this is the best of all worlds—the classic example is Hewlett-Packard in the late 1930s. I then told him the history of Shopsmith, the immensely successful company my brother and I founded in 1947 with \$30,000, for which we never had

outside capital.

I also said there were possibly two reasons why Autodesk might consider seeking outside capital. One reason was to greatly expand their then-tiny marketing effort to give them far faster growth. The second reason was that I could provide the distilled experience of some one hundred high technology companies, lessons learned over a quarter century of venture capital investing.

I also explained that venture capitalists had learned that an open spigot on options often bred serious problems, and that additional options could always be granted based on outstanding performance. I have always structured my venture investments to provide maximum incentive for those responsible for the future.

In our final meeting, at which all of the senior people were present, I stated that if they decided against Continental Capital's proposal I would personally like to invest up to \$100,000 and would buy common shares from any principal who might need liquidity at the same price we had discussed for the preferred shares.

Do I regret not being an investor in Autodesk? Of course I do. Our investors would have been very happy indeed with \$37 million. This would have been frosting for me on the \$100 million plus from American Micro Systems, KLA, Rolm, DataProducts, Four Phase, Capex, Telecommunications Technology, and our other successful investees which was distributed by Continental Capital from its total net capital invested of just \$750,000.

Bootstrap start-ups are all too rare in today's world. I wish John and his associates continued success.

Frank G. Chambers
San Francisco

TANDY HELP ON THE WAY

Your June 25th issue contained a letter from a desperate Tandy 1000-SX, DMP430 owner. I own the same setup, and understand his frustration—it's me, three years ago.

For any Tandy 1000 series owners among your readers, check out *One Thousand*

"For any Tandy 1000 series owners among your readers, check out *One Thousand Magazine*, 'Especially for Your Tandy 1000 Personal Computer.' This isn't a glitzy magazine; it's a nuts-and-bolts 'user's' magazine."

Magazine, "Especially for Your Tandy 1000 Personal Computer." They recently absorbed subscribers from the publication *1000*. Subscription/sample copy rates are available by writing *One Thousand Magazine*, P.O. Box 1688-EM, St. Louis, MO 63043-0688. Currently it's a monthly magazine, \$24 a year.

This isn't a glitzy magazine; it's a nuts-and-bolts "user's" magazine, and one every 1000 owner should see!

By the way, as a freelance writer and computer fanatic, I love *MicroTimes*. Although some of the articles are just a bit above my current level of interest and expertise, that merely makes me stretch and discover new capabilities. I save all the issues.

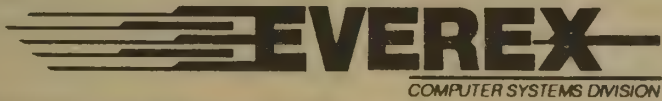
I pick up *MicroTimes* to get answers, and I've never seen an issue that didn't teach me something! One thing I really like is that you are not overburdened with reviews—just the right amount. I hope we'll see some of those neat little vending machines here in the LA County area soon.

Evelyn Mayfield
Torrance

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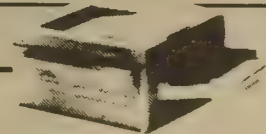
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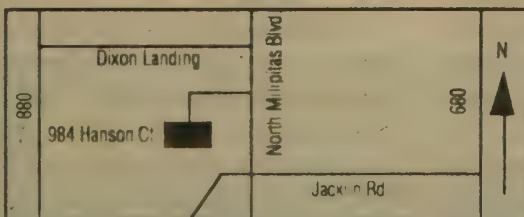
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NEWS & VIEWS

TECNICA SEEKS VOLUNTEERS

I just returned from South Africa, where I met with the leadership of the democratic movement. I received requests from them for TECNICA to provide urgent training and assistance.

TECNICA has been sending computer and other professionals to Nicaragua and Southern Africa for seven years. More than eight hundred professionals have worked on crucial projects, with a focus on training and transferring their skills. Now our friends in South Africa have asked for assistance at an important historical time.

Thousands upon thousands of people in South Africa are working to end apartheid and prepare themselves to compete in a technologically sophisticated society. Yet the vast majority of people have been systematically denied access to the training and skills that would mean

To office staff and managers who don't consider themselves computer people, Windows is a workable environment. DOS is not.

true equality. TECNICA is working to help rectify this imbalance, and you may be able to help.

I am currently recruiting specialists for three projects:

- New Nation, a leading anti-apartheid newspaper, needs assistance in desktop publishing, advanced word processing spreadsheets and telecommunications.

- Four trade unions need assistance in basic office automation, word processing, and desktop publishing.

- Nelson Mandela's organization, the African National Congress, is setting up a network of computers in their Department of Information and Publicity. They need training in desktop publishing and basic office automation.

If you have the skills and think you have the time available to participate, please call me or TECNICA's Africa Program coordinator, Jennifer Drayton, immediately. The phone number

is (415)655-3838.

If you are unable to work on these particular projects, but might be able to participate at another time, or if you want to find out more about TECNICA's programs, please call. I'll put you on our mailing list and make sure you receive the next issue of the TECNICA Bulletin.

Kim Porteus

Southern Africa Program Director
TECNICA
Berkeley

ANOTHER VIEW OF WINDOWS 3

Your readers might be well served by another point of view besides Paul Hoffman's on the subject of Windows 3.0 (July).

If, as Mr. Hoffman says, Windows has not been selling very well, that will come as some surprise to Microsoft, who has been shipping packages and receiving checks in greater volume than for all but a handful of software programs.

To dismiss Windows 3.0 as having a "better user interface" and "better memory management" is like dismissing computers as devices for handling ones and zeros. I have seen clients who wouldn't dream of creating a directory under DOS do so without fuss under Windows 3.0. To office staff and managers who don't consider themselves computer people, Windows is a workable environment. DOS is not.

The way Windows 3.0 uses extended memory is not just a matter of speed. It is a matter of allowing both programs and documents to be bigger than was heretofore possible on the PC. If you have the memory, the so-called 640K barrier is broken for Windows applications. Furthermore, on 386 machines with 2 Mb or more of memory, memory is managed to allow multitasking of DOS applications and to use part of your hard disk as virtual memory. These features Mr. Hoffman overlooks. Yet they are, as I have seen with several of my clients already, what makes your business work better, which is the point of your cover for that month.

Windows users, like Mac users, can launch their applications from the document names or icons, in contrast to the claims of the article.

It is simply not true that most Windows users up to now have used only a single Windows program at a time. Context switching of Windows applications has been the point of previous

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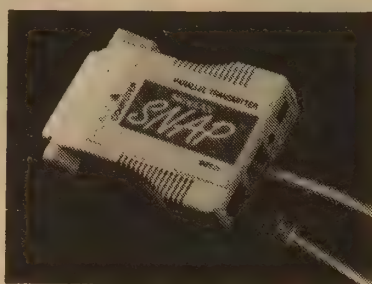
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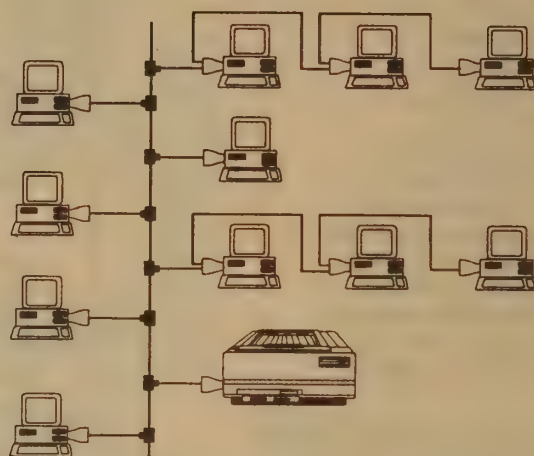
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NEWS & VIEWS

versions of Windows.

It may not be clear to Mr. Hoffman that Windows will catch on, but it is clear to developers large and small, including those who previously said they'd never write for Windows, and to users who are flocking to it in droves.

Windows, by the way, does not eat up the first megabyte of memory. To the extent that you have more than 640K, Windows moves itself out of that first 640K, using only a dribble and leaving the rest for your work.

As for memory upgrade, the existing base of machines is one thing but the important category is those machines now being acquired. Intel is right to point out that no machine with less than a 386SX chip should be considered today. To which I would add, get at least 2 Mb of memory and a mouse. Anything less will leave you out of developments from now on and leave your business at a competitive disadvantage.

Jordan Rosenberg, Ph.D.

President

P.C. Window, Inc.

San Francisco

(For yet another perspective on Windows 3.0, see our series by Lenny Bailes, beginning this issue.)

UNHAPPY AST CUSTOMER SPEAKS UP

I noted with dismay your recent one-sided hype for AST Research. After twenty years in the computer business, there are few companies I could *not* in good faith recommend doing business with, and AST is first. AST has one of the largest groups of dissatisfied customers in the marketplace, and with good reason—they do not do an even adequate job of support for their products, nor provide the wherewithal for their dealers or distributors to do so. Their support staff have actually lied to me and passed the buck. They drop products precipitously soon after promotion and sale, and have created armies of orphan users.

I am writing [*letter is handwritten—eds.*] instead of "lasering" because AST could not provide me a replacement controller board for its Turbo Laser. I have two spare AST multiserial boards gathering dust in the garage because AST, its distributors and dealers could not provide the manual for the product.

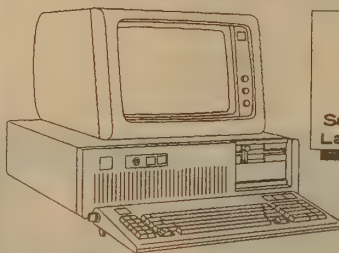
I have one word of advice for the computer world—don't buy AST! You will ultimately regret it.

Michael Dean

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Datacomm Directories, Fontmakers & Dark Data Deeds

BY JIM
WARREN

This column concerns systems that can be built, but haven't been. It also concerns some realizable fantasies that shouldn't be.

DATACOMM DIRECTORY'S DETAILS

Data communications programs control data modems and fax modems. They invariably have "phone directories." These typically permit the user to enter phone numbers

cations. (If you haven't yet succumbed to fax modems; check 'em out! I recently received an InterFax 24/96 box, from Abaton, combining a 9600-baud fax ability with a 2400-baud data-modem, and I'm *hooked*.)

ABOUT FONTMAKERS

Modern computers allow programs to deal with alphanumeric characters as arbitrary arrays of bits or pixels, rather than expecting use of a single, predefined, hardwired character font, as is true

in antiquated systems. This facilitates unlimited variety in

Font sets were first offered only as bitmaps. Doubling the size of such bitmaps doubled the visibility of their jagged edges. Adobe's PostScript popularized the alternative of offering font sets as smooth character outlines, defined by size-independent mathematical curves.

REALIZABLE FANTASIES

to be dialed by the software, and include arbitrary strings of characters "naming" each number. But:

Phone numbers should be allowed to include at least parentheses and hyphens to aid human readability, even though they are unneeded by the dialing software. Most directories allow this; some, sadly, don't.

Commas are also commonly permitted, indicating a 1- or 2-second pause in the dialing sequence—essential for most office phone systems and international direct-dialing. Consider these minimum requirements.

Most datacomm packages restrict name entries to relatively few characters. Far better: Permit long identification fields—at least 60-80 characters. Better still, allow such ID fields to have multiple lines, for arbitrary notes, reminders and other user information.

LEAVE IT THERE!

Usually, this "directory" is displayed upon command, visible until the user picks a number. Then the directory display promptly disappears.

Better: Allow the *user* to decide when it should disappear. Let the user choose between automatic-clearing and "when-I-decide" clearing, as a switch the user could set—and toggle—at any time.

Include these facilities in programs for data communications, and fax-modem software for computer-generated fax communi-

font sets and character shape, size and shade.

Such font sets were first offered only as bitmaps. Doubling the size of such bitmaps doubled the visibility of their jagged edges. Adobe's PostScript popularized the alternative of offering font sets as smooth character outlines, defined by size-independent mathematical curves. Many cheap or free bitmapped fonts exist, but there tend to be fewer outline fonts, which are usually much more expensive.

To use outline characters, a fontmaker (such as Adobe's Type Manager) first converts them to bitmaps, smooth at the desired size. That is, outline fonts can—and must—be converted to bitmaps for use.

So let's have reverse fontmakers that take those cheap or free bitmapped fonts, calculate their mathematical curves, and store those outlines in PostScript format—from which a PostScript fontmaker can create smooth characters like the originals, but at any size.

PROTECTION FROM THE SUN

Cincinnati Microwave's now marketing a very compact, battery-powered traffic radar detector named Solo. No cords; no tangle; no need at all for a cigarette lighter. But it still requires a 9-volt battery that must be replaced every six months or less.

Instead, they could use a solar power array and a rechargeable battery.

(Neat tidbit: Solo has an automatic power-off battery-saver. How? Why, of course, it feels for motion, then shuts down after 30 minutes of immobility. 800/637-0322, \$345+s&h; and no, I'm not gettin' any deal from 'em.)

MACCONNECTION DOES SOMETHING FOR THE EARTH

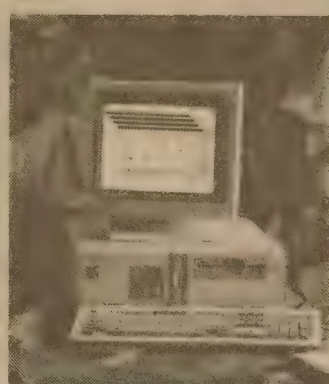
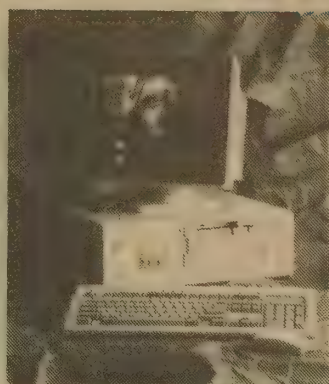
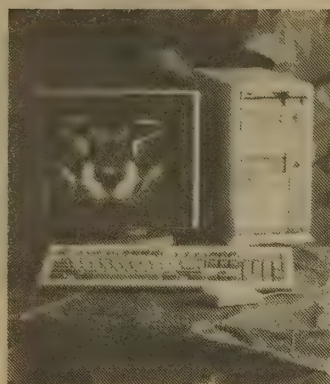
Last month, I urged software producers to be more environmentally sensitive and stop ridiculous packaging excesses—and tell the world of their worthy deeds. Well, program publishers are still wrapping tiny disks in massive waste-to-be, but mail-order's MacConnection (800/334-4444) has done precisely what I proposed. They switched from plastic "popcorn" to recycled newspapers as packing materials and started using smaller boxes—and reported their praiseworthy practice in a full-page notice.

Good goin', folks. Let's hope the rest of our industry cleans up its act, and our landfills—



Copyright © 1990 by Jim Warren. All rights reserved. Jim Warren founded InfoWorld, the DataCast proposal for broadcast-based paperless electronic newspapers, Video Initiative, Wireless Digital, Initiative, Inc. and the nation's largest public microcomputer convention. He was founding host of PBS television's "Computer Chronicles" series, founding editor of Dr. Dobbs' Journal, founding President of the Microcomputer Industry Trade Association and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics.

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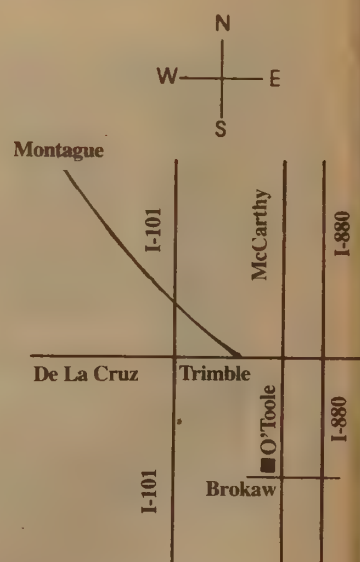
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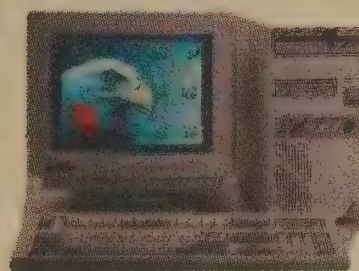
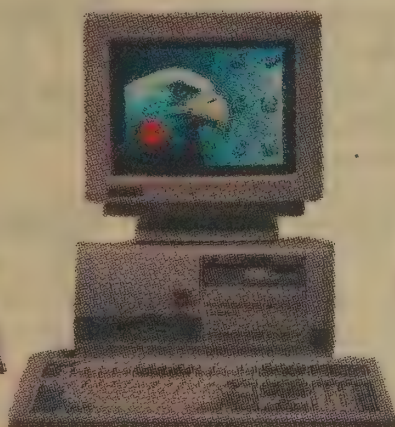
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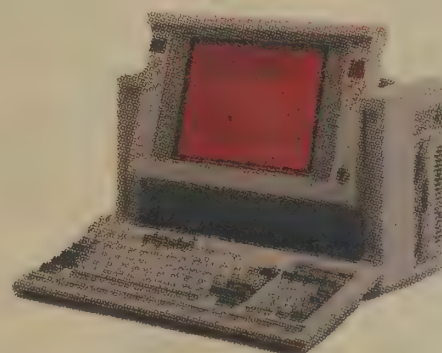
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DARK FUTURES FOR CITIZENS: HIGH TECH AND BIG BROTHER

Most powerful technologies are double-edged—with potential for great good and great harm. Computing's no different. Our government agencies have some "fantasies" they want to "realize":

FBI monitoring political BBSes?: Over a year ago, the Computer Professionals for Social Responsibility filed a Freedom of Information Act (FOIA) request with the FBI. They wanted records on FBI surveillance of computer networks and bulletin board systems (BBSes) used by lawful political and citizen advocacy groups. Just like the civil rights '50s and antiwar '60s. After four additional letters, the FBI still hasn't been able to meet FOIA's legal requirements. Guess they need bigger computers.

Mandatory work ID cards: There is growing concern about undocumented workers and associated employer penalties. This is the official justification for urging mandatory work authorization personal ID cards for all

citizens, perhaps related to Social Security numbers. Such cards would, just incidentally, aid access to personal information in numerous corporate and government databases, entirely unrelated to work eligibility.

Cellular surveillance: The FBI and the Defense Department's Advanced Research Projects Agency (DARPA) are now developing systems for monitoring cellular phone communications. Of course, we can be confident they will only be used to monitor nasty ol' Commies, Arab dictators and the Army's latest Menace—rural pot growers.

Secret systems; "Trust us!": As the FBI, DoD, NSA and CIA seek Congressional funding and authorization for these and other tools to monitor US citizens—*surprise!*—their designs and other potential uses are classified. Just like the Pentagon Papers. And—my *goodness!*—the systems proposed to Congress sound flawless!

Especially when presented by experienced bureaucrats backed by Beltway Bandits lobbying for funds, and evaluated by mostly-nontechnical Congresspeople and mostly-nonspecialist Congressional aides—with independent technical professionals prohibited from reviewing these secret citi-

Most powerful technologies are double-edged—with potential for great good and great harm. Computing's no different. Our government agencies have some "fantasies" they want to "realize."

zen surveillance systems. Oppose it!—while you still can.

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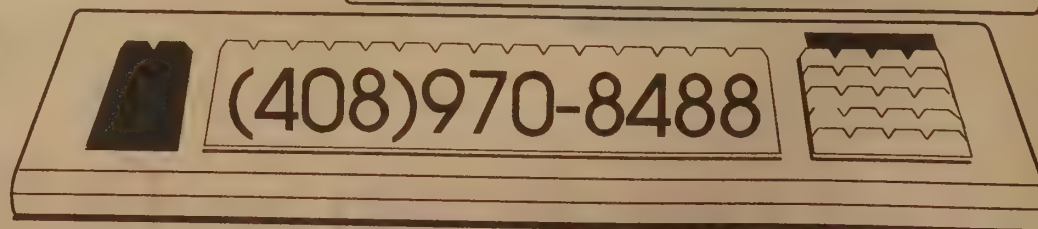
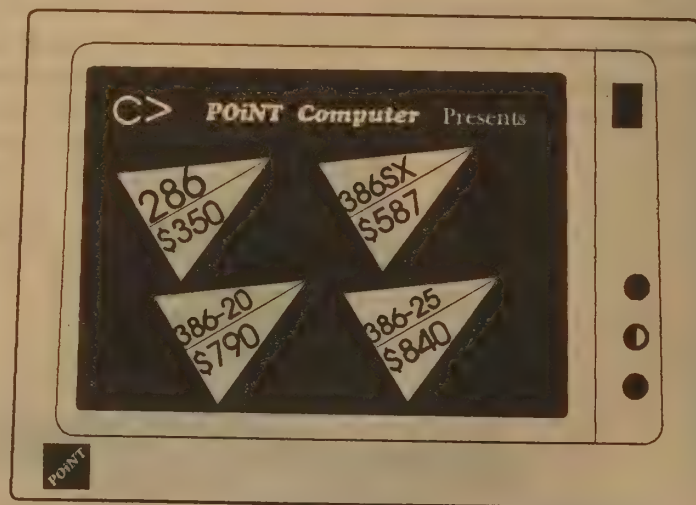
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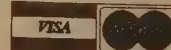
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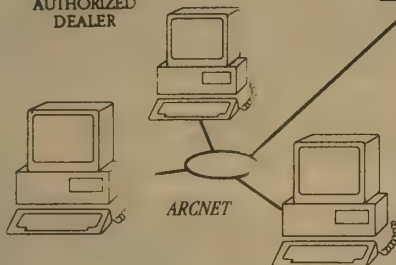


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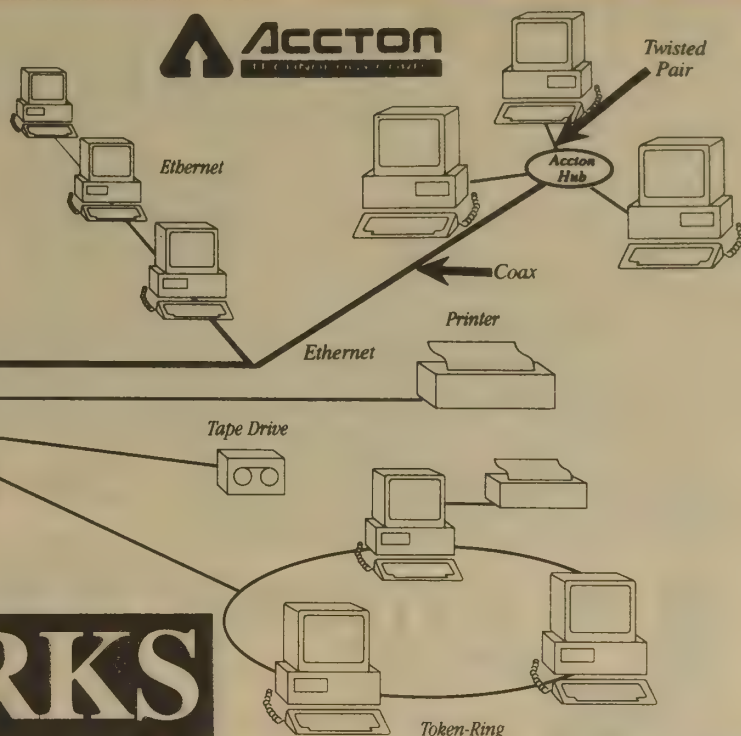
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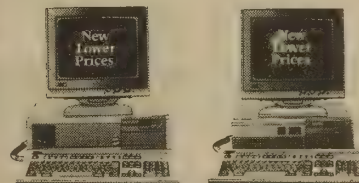
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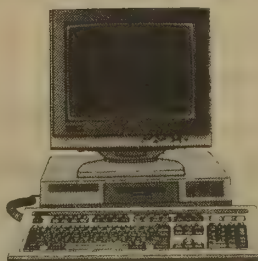
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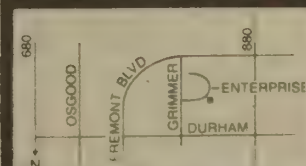
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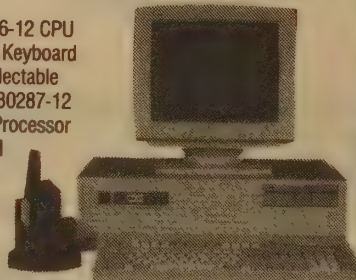
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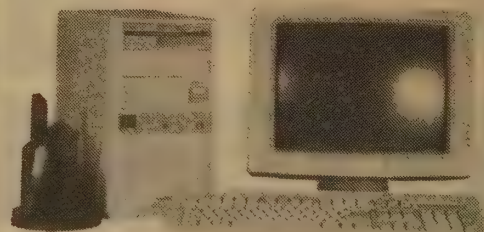
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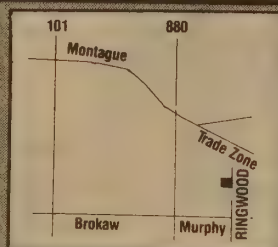
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Desktop Publishing For The DOS Office

Tips And Recommendations

**BY BIRRELL
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You've decided to set up desktop publishing for your company. Your company has standardized on DOS machines. What do you do? What are the best choices for you, and what are your costs? What do you have to buy, and what can you skip? In this article and its sequel, we will examine the choices you have to make in hardware and software. Of the many products available, we will tell you which have worked for us and why we like them.

The answer to the question "What should I get?" is always "That depends..." We will identify the factors on which each answer depends, so you can put your money into the best hardware and software combination for your needs. We will also mention dead ends that you could get caught in. All the street prices are from *MicroTimes*' September issue.

THE HUMAN FACTOR

It is easy to think that hardware and software are your biggest investment. In fact, they are nothing of the kind. Your biggest investment will be in people.

Whether the person who does the publication is you or an em-

PART 1: HARDWARE

ployee, you will spend more time and money on people than you will on the products you buy off the shelf. The system's operator will make it a worthwhile investment or a painful white elephant. That means that when you look at a product, you should ask yourself what its impact will be on the person who will sit at the computer for hours designing your publications. If the product facilitates the work, it will pay for itself. If it makes the work difficult it will quickly lose you any savings you might make by buying cheap.

Is the product ergonomic? Is it designed so that what you do naturally is the right thing, and so that it fits in with the shape and movements of the human body and the human nervous system? A mouse that fits the hand easily may save you a case of carpal-tunnel syndrome. A monitor that flickers or squeals may damage vision or cause headaches. Let the worker who is going to use it test the system. If he or she likes it, it is much less likely to be a burden later. If *you* are the user-to-be, don't let dollar signs get in the way of taking care of yourself.

WHERE TO BUY

The second thing to think about is where to buy. Our recommendation is simple: Buy hardware from someone local who will service it locally. The local support is worth a few dollars more. Buy software, on the other hand, from the cheapest source that can be trusted to deliver it. Often that will be a mail-order house in a far place. Support for soft-

ware comes from the manufacturer anyway; there is no benefit in buying locally unless you *know* the dealer offers software help.

XT? AT? 386?

Recommendation: You *must* have a hard disk to do desktop publishing. If you have a 286, keep it for now. If you have an XT-compatible (an 8086, 8088, or V20 machine), upgrade to a 386.

The two major desktop publishing programs are Xerox's Ventura Publisher and Aldus' PageMaker. Both of them use the Windows environment. The Windows environment also gives you access to essential painting and drawing programs.

Therefore, you need hardware that supports the new Windows version 3.0 well. The minimal hardware that will do this is the 80286 machine, of which the IBM AT was the first example. If you have an 80286 machine, you do not need to upgrade at this time. Since the prices of 386 machines are dropping, they will be a better buy tomorrow than today. Hold for now.

If you have an older machine with an 8086, 8088, or a V20 processor, the sort that is called an "XT" or an "XT clone", it is time to upgrade. You will not be able to run Windows quickly or well on the machine you have. When you do upgrade, do not settle for an AT machine. Software will be made in the near future that will not run on the 80286, and you will be unable to use it.

If you work with documents of any size, you will value the fast processor and large memory access of a true 386. Do not buy a 386SX. The SX has a narrow data path—it thinks fast but talks slow. When you have an application like desktop publishing constantly talking to the hard disk, the monitor and the printer, you want that wide data path. If this is what you're going to be doing, ignore the blandishments of those trying to peddle you a 386SX or 80286, and go for the full-featured 386.

POINTERS

Recommendation: Buy a Microsoft Mouse, unless you do a lot of drawing. Then consider a Mouse Pen.

Step by step, Microsoft is coming to dominate the DOS computer industry. In the case of mouse technology, they did it by putting out a good product. Microsoft Mouse compatibility is the industry standard.

The latest Microsoft mouse fits the hand well and is more comfortable to use than any other mice we have tried over the years. You can tailor its responses and sensitivity. It is available in a model that plugs into a serial port or a "bus" version that comes with its own card. You can get it for \$90, or bundled with Windows 3.0 for \$149—a good deal since you will need Windows anyway.

If you do much work with graphics, you should try out the Mouse Pen from Appoint. You hold and operate it like a standard pen. The

buttons on the Mouse Pen are on the column of the pen. It is considerably easier to use than a mouse if you have to do a lot of drawing. The \$149-list-price Mouse Pen may be hard to find; you can call Appoint at (800)448-1184. If most of your work is point and click, with just an occasional graphic, the Microsoft Mouse is easier to use.

GRAPHICS BOARD AND MONITOR

Best-case recommendation: Get a display system (monitor and display card) that will give you 1024 x 768 pixels of resolution, non-interlaced. Minimal: Stick with a Hercules display, but get a black-and-white instead of an amber monitor.

You need a good display to see pictures and text as they will be printed. This is a high-ticket part of getting into DOS desktop publishing. It will cost you at least \$800 to do it right. Sorry it costs so much—blame the folks who thought no one would want true graphics on IBM compatible computers.

If you settle for the Hercules-compatible (or EGA) system you started with, every graphic image and typeface will be vertically distorted. What will print as a circle looks like an oval on the screen. That works fine for composing text, but it does not work when you are judging how your publication will look.

But why go beyond VGA? If you can get a good VGA monitor for \$300 and a board to drive it for \$100, why spend another \$400 going beyond the 640 x 480 resolution of standard VGA?

VGA displays do not have distortion, but they do lack resolution.

1024 x 768 displays give you the sharpness you need for precision. Since the most expensive part of your investment is always people, it is worth spending an extra \$400 to let those people do precise work. You get two and half times as many pixels displayed in a 1024x768 display as in a 640 x 480 standard VGA.

The extra resolution

will make it possible for you and the people you are working with to do a much more elegant job. Display standards are developing so fast that it is wasteful to buy less. You will be losing money by buying into obsolescence. EGA, the standard which preceded VGA, is already obsolete.

For a display card we chose the remarkably easy-to-install VGA Wonder by ATI. This board is made by Canadians (the same folks who smuggled our diplomats out of Iran, remember?) and like most Canadian products it is well-made and a good value. It will display up to 1024 x 768 non-interlaced resolution, but will also support VGA, EGA and Hercules resolutions. The price is among the lowest in the field, while ATI gives you the highest available quality. Their technical service is skillful. This is a bargain at the street price of \$199.

It is possible to spend \$2,000 for a high-quality monitor. Fortunately, you do not have to. We found that the Sony 1302 and 1304 monitors served very well. Sony uses the same crisp Trinitron technology in their monitors that they use in their television sets. You can obtain the 1302 and 1304 on the street for \$599 and \$689 respectively.

Both are multisynchronous monitors. Each is capable of displaying EGA, VGA (480 x 640), EVGA (800 x 600) and interlaced 1024 x 768 signals. The difference is in the top and the bottom of the display abilities. The Sony 1304 can also display the faster 1024 x 768 non-interlaced display, without the flicker which some people perceive with the interlaced picture. The flicker, for those who notice it, can be distracting and even painful. On the principle that people are the most important part of your publishing operation, you would probably spend the extra \$90 for the 1304.

You might consider the slightly cheaper 1302, which cannot produce non-interlaced output at 1024 x 768, if you need to use the monitor for a second purpose: CGA display. CGA is the oldest and coarsest resolution of all DOS displays, totally unsuitable for desktop publishing; but some people make their monitors serve double duty as a secondary display for their laptop computers. Many of the recent crop of laptops (like the Toshiba 1200xe) have a CGA display and can use an external monitor. If you have this special need, consider the Sony 1302, because the 1304 will not display CGA. Otherwise, get the Sony 1304.

If you decide not to get the optimal display, stay with what you have for now. Probably that is a Hercules-compatible display, which will leave you with a vertically distorted view of graphics. You can considerably reduce eye-strain by spending \$100 to \$150 on a black-and-white monitor to replace the amber monitor you may have. We have used the Nanao 3030 for several years. It is a reliable performer with an attractive screen image.

LASER PRINTER AND EXTENSIONS

Minimal recommendation: You must have a laser printer to do desktop publishing. Get a Hewlett-Packard compatible printer with enough memory (1.5Mb at least) to do full-page graphics. Optimal: Consider making the printer PostScript compatible.

The laser printer's 300 x 300 dots-per-inch resolution is the minimum acceptable for photo reproduction. If you want to be in the business, you will have to have access to a laserprinter.

Hewlett-Packard's LaserJet series has set the DOS standard. You can obtain excellent laser printers that are compatible with HP's from a variety of manufacturers. If you already own a laser printer that is compatible with at least an HP series II, you only need purchase enough memory to allow full-page graphics. If not, expect a street price of at least \$1000 for a printer.

Three hundred dpi is the minimum acceptable resolution. Considerably better resolution is available, and one way to get it is to standardize on PostScript-compatible output. The output is not fed to the printer as a series of dots, but as a description of the page in a language which the printer must interpret.

The additional intelligence in a PostScript printer can make it \$1,000 more expensive, but Pacific Data has developed an alternative.

Buy hardware from someone local who will service it locally. The local support is worth a few dollars more.

If you have an XT or XT clone, it is time to upgrade. You will not be able to run Windows quickly or well on the machine you have. When you do upgrade, do not settle for an AT machine.

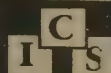
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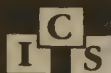


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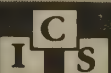


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They market Pacific Page, a cartridge which fits into the same port as a font cartridge. It serves as ROM to make an HP-compatible printer PostScript-compatible. You will be able to print PostScript output at the best resolution available on your printer. You will also be able to print your documents to a file, and to take the file to PostScript-equipped professional printers. They will be able to print from your file at resolutions of 1200 dots per inch or more.

Street price for Pacific Page is around \$400. You will need 2.5Mb of memory in your printer, which Pacific Data Products will also sell you.

SCANNER

Recommendation: Get at least a cheap scanner. We recommend the Logitech ScanMan.

Scanners are devices to digitize flat images and bring them into your computer. Corporate logos, for instance, can be very difficult to reproduce by hand. A scanned logo may only need brief cleanup before it is ready for use in your publication. You may use the images as they are, manipulate them graphically, or (with optical character recognition software) convert scanned text to ascii files.

The bad news is that scanners can be quite expensive. Flat-bed scanners give the best image, at the highest price. But handheld scanners can produce very acceptable images. We use the Logitech ScanMan to digitize small images.

The ScanMan has resolutions up to 400 dots per inch, and several controls to deal with the detail and darkness of the image you wish to

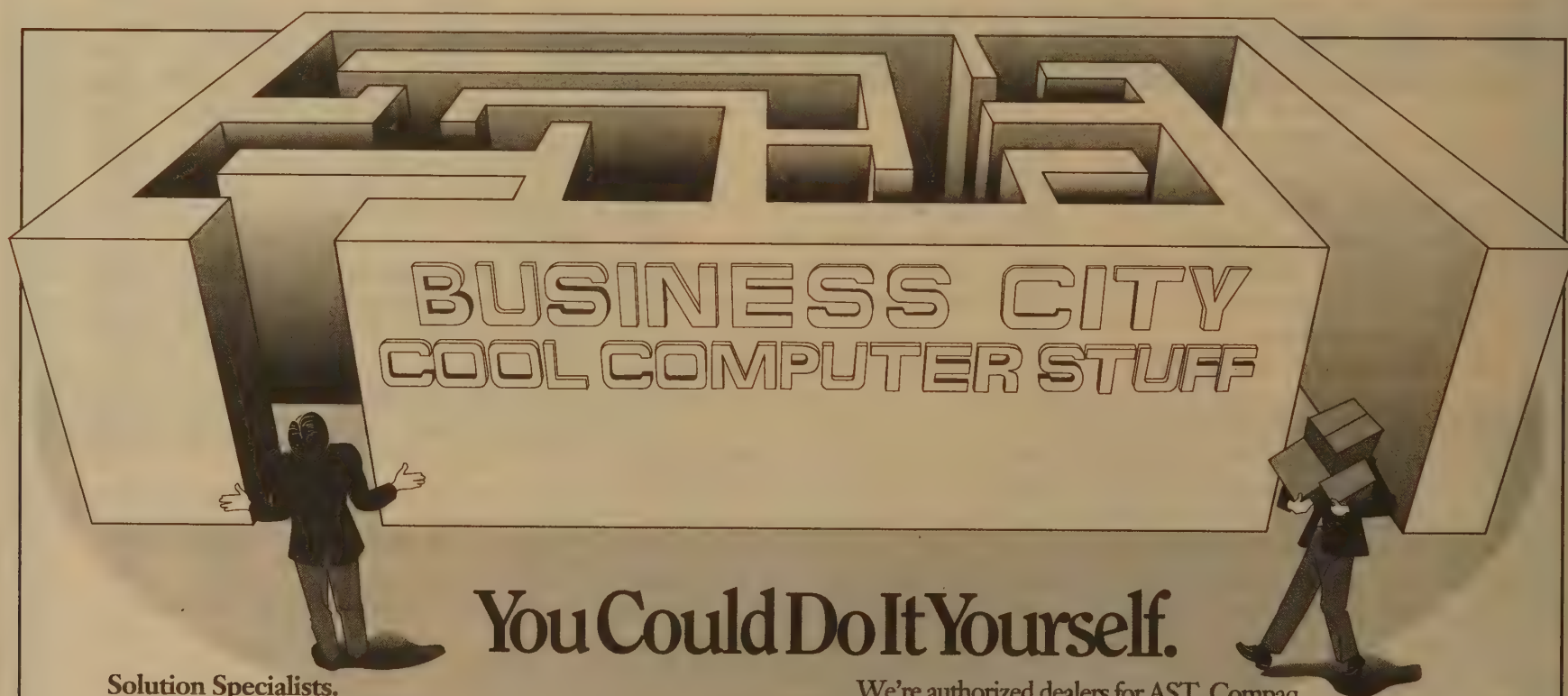
scan in. Included is a painting program you can use to clean up the scanned-in images. For the price, this is a remarkable combination of hardware and software. It will not adequately reproduce photographs in most cases, but it will save the day if you need to use cartoons, logos, Chinese or Japanese characters, or small graphics. We were able to produce a T-shirt master (a desktop publishing application few people think of) in one hour because of the ScanMan. It is worth the street price of \$149.

CONCLUSIONS

You can spend a lot of money to get started in desktop publishing. You can also start simply and then build up your hardware investment.

Remember that people are the most valuable part of your business. Make sure that those who will use the system take part in selecting the hardware. Buy hardware with local support; buy software where the price is best. Never buy anything without pricing it from at least three sources. If a smiling salesperson tries to intimidate you and suggests you shouldn't ask questions, walk out.

If you have never done desktop publishing before and this is your first exposure, *do not* buy anything. Go to a small desktop publishing shop and try out the equipment for yourself. Monitor resolution, processor speed and print quality are abstractions until you have experienced them. Even though it can be expensive to patronize a laser parlor, it will give you a concrete feel for what you need. It is worth every cent. ■



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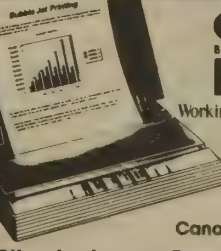
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The System Manager

BY MIKAEL
BLAISDELL

From venerable twin-floppy PCs and/or Apple IIs to the latest-and-greatest 486es or super Macs, computers in the workplace are so commonplace that we take them for granted. And as the price continues to come down, more and more people are able to take advantage of the benefits they provide. However, with those benefits come risks as well—and they are not trivial risks.

Within a very short time after you install your computer, the data that is stored on the hard disk is likely to be worth far more than the total cost of all of the hardware and software combined. This fact is especially true for business computers, and the time factor is incredibly short if the computer is either used by several people or a file server for a local area network. Unfortunately, the importance of this situation is something that both the business owner or manager and the dealer are likely to overlook, with truly ugly results.

It is not unusual for departments or entire businesses to be effectively halted when the computer becomes unavailable. This situation, however, can be dealt with quite effectively—if the process is begun well before the symptoms occur. Over and above the normal hardware maintenance contract, the proverbial "ounce of prevention" starts with somebody saying: "That's *my* job." That person is the System Manager.

WHAT DOES A SYSTEM MANAGER DO?

The concept of a System Manager is not new. All mainframe computers, and most minicomputers, will have such a manager, often called the System Operator or Sysop. With the increasing proliferation of UNIX-based multiuser systems, even microcomputer installations will be forced to retain such a manager in order to remain operational.

Unfortunately, the manager of a UNIX-based system will be required to have systems-level programming skills in order to perform their duties, and an even more qualified individual will be needed by a network computer installation larger than a few stations. However, even single-user PCs need proper maintenance and management, and the skills needed for this job are not difficult to acquire.

Regardless of the level of skills required, the practical responsibilities of the system manager's position are fairly constant. What's needed is someone responsible for keeping the system up and operational—who knows when, and whom, to call for help when problems occur. At the same time, the system manager is also the person who does the backups, keeps the hard disk from accumulating junk files, sets up and trains new users, keeps records on hardware maintenance, etc.

The duties and responsibilities of a PC System Manager could easily be assumed by an executive-level secretary, office manager or administrative assistant. The sole, and absolute, qualification is that a prospective system manager must possess the willingness to assume responsibility for the job—and the trust of management. The PC System Manager need not have programming skill, mathematics background, electrical engineering degrees or other such qualifications. Nor is extensive technical training required—to start.

The duties of the System Manager include:

- Daily startup and shutdown, as appropriate
- Daily backup/archive of data
- Weekly full backup/archive of data
- Monthly disk maintenance (removal of junk files), compression of disk space, etc.
- Maintenance of security measures, etc.
- Regular printouts of directories, data as appropriate.

•Maintenance of Master diskette or tape library.

•Maintenance of documentation library, including:

Manuals, revision notes & user guides

Printouts of directory trees, filelists, configuration files

Registration cards, serial numbers, model numbers, revision levels.

Some systems are in operation around the clock, so there is no need for a daily startup and shutdown routine. It is important, though, that the system manager know how to do these functions and have the practical experience to be able to perform them as needed.

BACKUPS

The daily and/or weekly backup procedures are the heart of the manager's job. While it may seem somewhat silly to make copies that (you hope) will never be used, a moment's thought of what you would do if an emergency happened and you didn't have those backups should convince you otherwise. Unfortunately, it is a proven fact that most people, especially professionals who should know better, will not take the time to make any kind of backups at all. It often takes two and even more real disasters for the lesson to finally sink in that backups are necessary. This factor alone more than justifies the employment of a system manager.

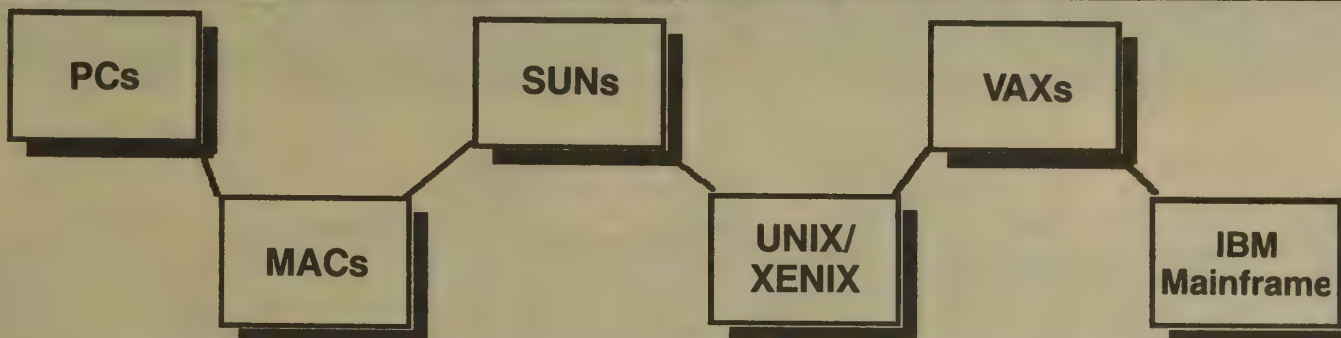
DISK AND FILE MAINTENANCE

But there's more to the manager's role than simply doing the backups.

Hard disks are like garages: they tend to attract and retain junk and clutter that may stick around forever until the sheer volume begins to affect the way your system is used. Like a garage so packed that you can't get the

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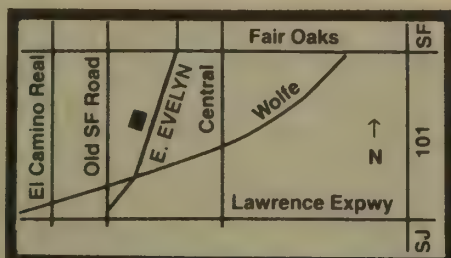


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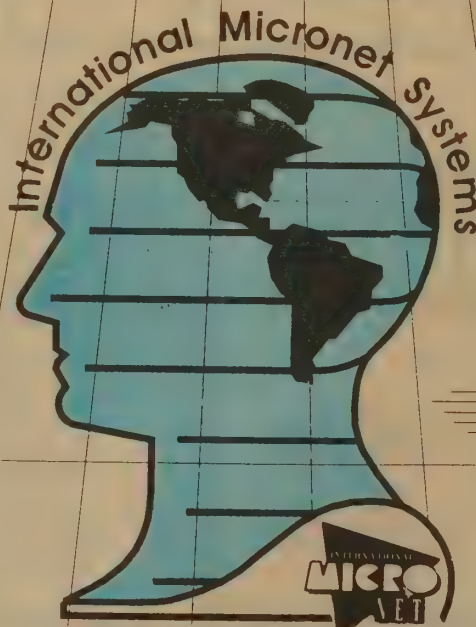
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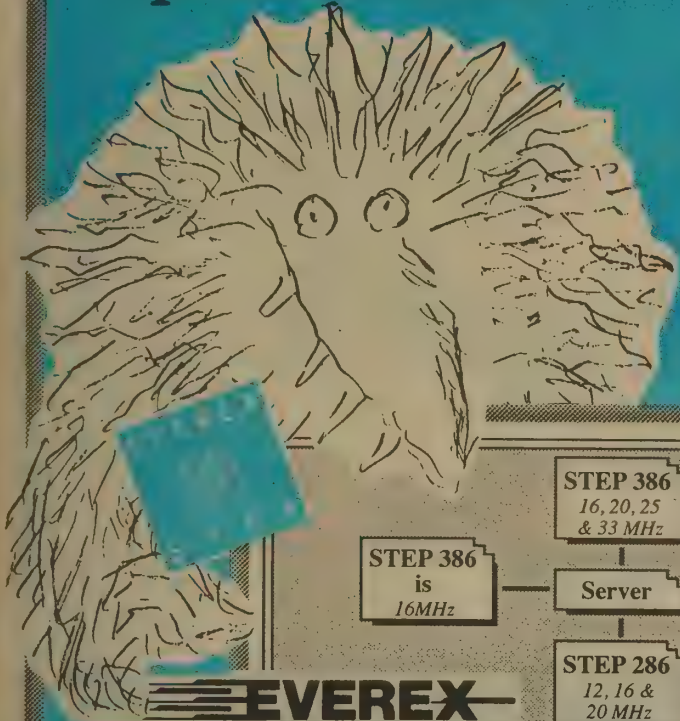


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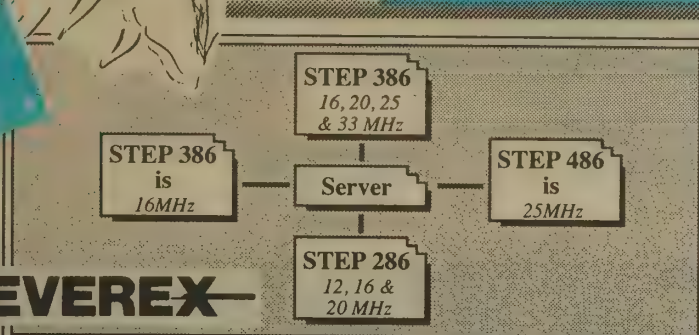


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car in anymore, your hard disk may get to the point where it won't hold any more files. Cleaning up such a disk is a monumental job, and it is not unknown for a company to buy a bigger disk rather than face the cleanup of the old one. This quick escape may please the computer dealer, but it simply postpones the inevitable day when the job has to be done. Regular cleanups are another critical part of a system manager's functions.

SYSTEM SECURITY

Another neglected function that falls naturally within the system manager's responsibility is that of system security, both physical and virtual.

With the proliferation of viruses in the DOS and Macintosh environments, the danger of loss is steadily growing. A variety of tools can inhibit and/or remove viral infections, but they won't do much good if they are not installed and used properly.

Password protection of sensitive data and programs is likewise useless if the passwords are not regularly changed—and kept confidential. Unless forced, the vast majority of computer users will not change their passwords or observe even the simplest of security procedures. One of the difficult-but-necessary "hats" worn by the system manager is that of enforcer of the security rules.

PRINTOUTS

Hard copy printouts of the names and locations of files on hard disks is rarely done, and yet can be of considerable value in resolving problems and recovering lost access. Directory structures should also be kept in hard copy. Since both directory trees and file names/locations will change with use, the system manager should regularly do printouts of these lists, preferably as a part of the backup process. DOS Cfig files are another "changeable" item, and it is a wise practice to regularly make a printout of such files.

When software modules are installed, there is often a configuration procedure involved. The system manager should keep a hard copy of the information required for the configuration, so that if the job ever has to be repeated, the necessary data is at hand. This step can save hours of re-inventing wheels, and the cost savings can be exceptional if a high-priced consultant is involved at a later time. It doesn't make much sense to pay consultant rates for simple reconstruction if you can avoid it.

Serial numbers, revision levels, disk model numbers, etc. are all important information

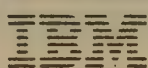
items that the system manager should have readily available at all times.

SOFTWARE LIBRARY

Along with the backup copies, both on-site and off, the manager's job also includes keeping the master copies of both disks and documentation for all software and hard-

ware elements of the system. Dealers have been known to forget to deliver master copies, and the system manager should insist on making sure that all masters and documentation are safely stored in a central location. Visiting programmers have also been known to borrow and neglect to return such items, and the manager needs to keep careful watch to avoid the "missing disk or docu-

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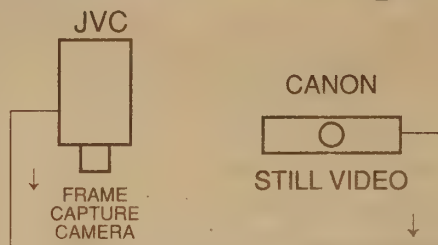
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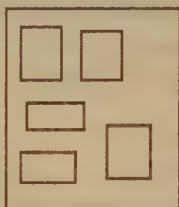
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mentation" syndrome.

CONTINGENCY PLANNING

The essence of the system manager role is planning and preparation for the problems that will occur. It is foolish to expect your system to operate flawlessly forever—while you may be lucky for a long time, luck is unreliable. Disasters will happen, and there will be losses. Advance preparation will reduce the impact of those problems and lessen the costs, and the savings that result from that preparation will more than cover the cost of the system manager's time and efforts.

When a problem does occur, all of the system manager's preparations are put to the test. The manager needs to determine:

- What happened?
- What components were involved?
- What are the immediate effects?
- What are the likely and/or possible causes?
- What needs to be done to correct the problem?
- What are the consequences?

(Note that the system manager does not necessarily need to know how to fix the problem, only how to analyze what needs to be done about it and what the possible consequences might be.)

If the problem is such that more technical programmers and/or consultants are needed, the manager still has a role to play. Here's where the careful storage of pertinent information on configurations, revision levels, master disks and documentation, and especially the backups, pays off in a big way. If all of the necessary materials are at hand,

the consultant doesn't have to waste time (and money) in research and re-creation tasks.

TRAINING THE SYSTEM MANAGER

The training of a system manager ideally begins just prior to the installation of the computer system, but if your system is already installed, the training of the system manager begins as soon as that person is appointed. At first, he or she should be given a set of written procedures for performing the immediate tasks. Over time, the manager will learn, by doing, more procedures and more about the computer and its operations. Standard computer concepts and terms, at first strange, will become gradually understandable and familiar. Courses are available from a variety of sources to increase the manager's skills and knowledge.

Other than the responsibility for data integrity and security, the most important elements of the system manager's job are those involved with keeping Management informed as to the status of the computer system. For example, the manager will know that at the end of the month, the computer will be performing accounting functions. Should there be a problem, certain people must be informed as soon as possible, so that the consequential difficulties can be kept to a minimum. Likewise, if the letter quality printer is down, office correspondence will be delayed. It is the role of the system manager to know, in general, all functions that are being done on the computer—so that the possible consequences of any problem can be evaluated in advance.

We all know that Murphy was an optimist. Problems will occur and losses will result from them. It is also well known that computer users can not be trusted to take care of their own maintenance responsibilities, regardless of how often or how loudly they are admonished and/or lectured on the subject. Such duties are not considered a part of their jobs; performance reviews do not include a category for how well employees maintain their computer system. The difference, however, between large and small losses has a lot to do with the application of some common sense, and the proverbial ounce of prevention in the form of a designated system manager. The Return On Investment for such a step can be unbelievable. ■

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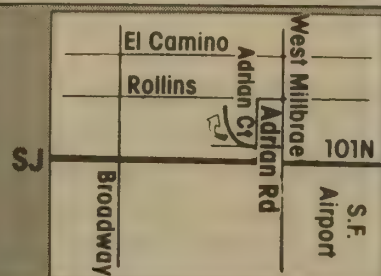
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When Disks Go Bad

New Tools From Norton

BY BENNETT FALK

My first computer was an Osborne 1. It had a 64K memory, two floppy disk drives, each with a capacity of about 90K, and CP/M for its operating system.

After several months of use, attempts to list the contents of a frequently used diskette failed repeatedly with the message "BDOS error on drive B:". The contents of the disk had apparently become inaccessible.

Knowledgeable people speculated that the directory area of the diskette maintained by CP/M had become corrupted. How, exactly, no one would say, though there were dark allusions to the flimsiness of the floppy medium and to power fluctuations.

THE EARLY DAYS: DUV77

Eventually one of the knowledgeable people offered a public domain utility named "duv77" ("Disk Utility, Version 7.7") to examine and edit floppy disks sector by sector. In order to use duv77, however, I had to learn about the structures used by CP/M to store information on diskettes and about using hexadecimal numbers to represent bytes. These pieces of information were readily available from magazine articles. Patching the diskette was relatively easy, and I got my files back.

Time went on. CP/M and the Zilog Z80 lost market share to MS-DOS and the Intel 8088. The floppy medium, however, continued to be flimsy, and power continued to fluctuate. The IBM PCs of this world were plagued by the same problems that affected their CP/M predecessors: disks went bad.

Of course, the PC added some new wrinkles to the problem: DOS supported hierarchical directories and hard disks more readily than CP/M did. Like other advances, these technological innovations were mixed blessings. Hard disks offered both greater storage capacities and lower failure rates than floppy disks. However, using a hierarchical tree of directories to manage this increased storage capacity placed an additional burden on the user who now had to think about more files, visualize a directory tree, and eventually remember which God-forsaken directory any particular file had been left in. True, disk errors were less likely on hard drives than they had been on floppy disks, but increased human error more than compensated for this advantage: it was more likely in the PC world that a file would be mistakenly erased or lost forever in some forgotten sub-directory.

Programs like duv77 were good for coping with floppy disk failures, but not particularly adept at coping with human error. The PC environment required something more than duv77, and it came along in the form of the Norton Utilities.

NORTON UTILITIES FOR DOS

Like duv77, the Norton Utilities for MS-DOS provide the ability to read and write individual disk sectors. Unlike duv77, the Norton Utilities do not absolutely require knowledge of the data structures used by the operating system to store information on disks. Users of the Norton Utilities can poke around on their disks using directory path-

names and filenames, the same relatively familiar abstractions used by the operating system. Critical functions for PC users (like UnErase) are automated and given an interesting user interface.

In general, the Norton Utilities make the hopelessly nerdy business of editing raw sectors of disk seem like something a human being might actually be interested in doing. Other utilities to manipulate screen attributes or do mundane file and directory management are included with the UnErase and Disk Exploration utilities.

IN THE UNIX WORLD...

The Norton Utilities for DOS remain very popular, but time continues to go on. In the wake of the PC glut, the UNIX-based systems have been accepted as a reasonable vehicle for making more powerful computer resources available to a larger audience.

Unlike their CP/M or MS-DOS predecessors, UNIX systems are primarily fixed disk systems. UNIX systems rely very little on floppy or removable disks and tend to have larger disk capacities than DOS systems. Human nature being what it is, however, UNIX users are no more careful about their files and directories than DOS users.

UNIX itself provides very little to protect users from either media failure or their own mistakes: an arcane file system debugger (fsdb) and the command "rm -i" which requires user confirmation before deleting a file. Detractors of UNIX will identify this as a weakness in the operating system. UNIX proponents will talk about the importance of building a community of users who take responsibility for their online behavior.

Without waiting for the outcome of the debate between ease of use and social responsibility, Interactive Systems, Peter Norton Computing, and Segue Software have produced a version of the Norton Utilities for UNIX System V.

UNIX

The System V version is a surprisingly faithful implementation of the DOS product's capabilities, and given that UNIX disk organization is more complicated than its DOS counterpart, this is no mean feat.

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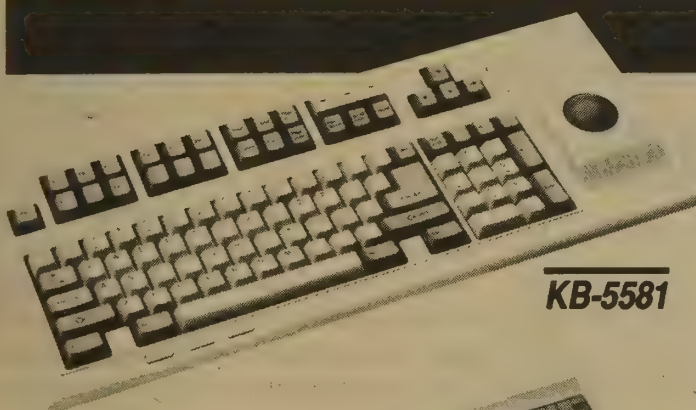
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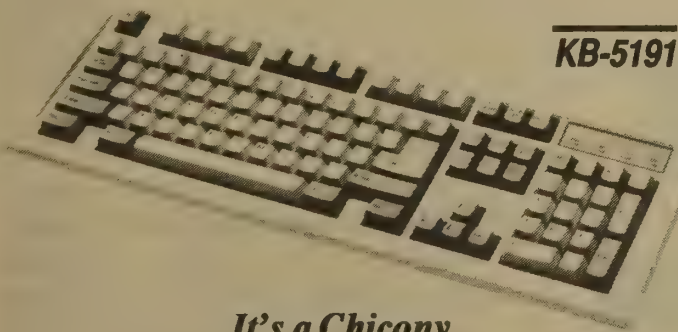


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NORTON UTILITIES FOR UNIX

The UNIX version of the Norton Utilities is intended for use with a number of UNIX products for computers based on the Intel 80386 processor. Supported operating systems are Interactive 386/ix 2.01 and 2.02, Interactive UNIX System V/386 Release 3.2 Version 2.2, and AT&T UNIX System V/386,

Releases 3.2 and 3.2.2. To take advantage of the UnErase facility, Interactive installations will also need the Kernel Configuration and STREAMS packages. AT&T users will need the Network Support Utilities Package. Using the Norton Utilities on terminals other than the console requires the TERMINFO package.

Like the DOS package, Norton Utilities for System V consists of screen-oriented tools for exploring disks and un-erasing files. Bundled with these programs are other, less grandiose utilities to do various things: find files, list and change directories, search for text in files, manipulate the display, and administer the setup of the utilities themselves.

The System V version is a surprisingly faithful implementation of the DOS product's capabilities, and given that UNIX disk organization is more complicated than its DOS counterpart, this is no mean feat. Typically a UNIX disk will be formatted and partitioned. Each partition can be organized into a file system which then must be mounted on a directory hierarchy.

Disk partitions, file systems, and the directory hierarchy represent three different ways of viewing a UNIX disk, and the System V version of the Norton Utilities allows the user to explore the disk from *any* of these perspectives. Disk partitions and file systems contain structures that are not widely understood because they are used primarily by the operating system to administer disks behind the users' backs. The Norton Disk Explorer for System V provides a means of querying these structures in a human-readable format, and consequently it is an invaluable tool for learning about UNIX file system organization. A knowledgeable user could use the disk explorer to repair a damaged file system, but this should be approached with great caution. In most cases it is less risky to rebuild damaged file systems and restore from backups.

UNERASE

Among UNIX users, accidental removal of files occurs more frequently than disk failure, so the Norton UnErase program ought to be of more general interest than the disk explorer. Implementing the "UnErase" program on UNIX is tricky because removal of a UNIX file really leaves no reliable record from which the file could be reconstructed.

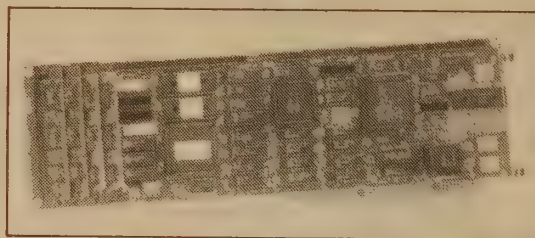
Norton UnErase for System V addresses this problem by maintaining a database with information about deleted files as well as a link to the file itself. With Norton UnErase turned on, the remove command doesn't really remove the file, it simply links the file to another directory administered by UnErase. Within Norton UnErase, the system administrator establishes a "retention policy" that determines how long deleted files will be kept before being finally purged.

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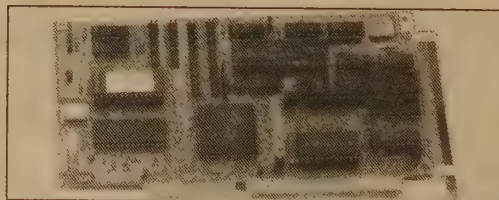


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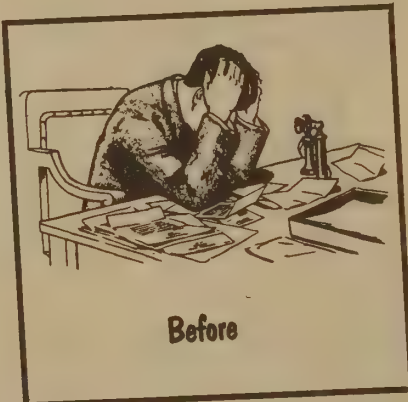


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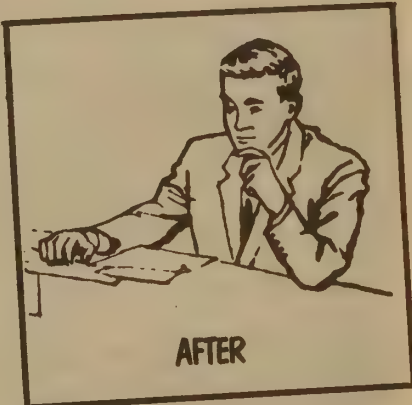
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Implementing
the "UnErase"
program on
UNIX is tricky
because
removal of a
UNIX file really
leaves no
reliable record
from which the
file could be
reconstructed.
Norton
addresses this
problem by
maintaining a
database with
information
about deleted
files as well as
a link to the file
itself.

UnErase for System V does quite a bit of
work in the background. At installation
time, UnErase requires modifications to
the UNIX kernel (no big deal if the operat-
ing system is installed properly), and at

run time,
UnErase re-
quires a
background
daemon for
each file sys-
tem that is
protected.
The root di-
rectory for
each pro-
tected file
system will
contain a di-
rectory
named ".nor-
ton" in which
UnErase
maintains its
copies of de-
leted files.

Unlike the
DOS version
of UnErase,
Norton
UnErase for
System V
can't unerase
files "retro-
actively": the
only files that
can be recov-
ered by
UnErase are
those deleted
while erase
protection
was turned
on. Users al-
ready famil-
iar with UNIX
may find it
unnerving
that, with
erase protec-
tion enabled,
the "rm"
command no
longer frees

the space occupied by a file.

UnErase does give the system adminis-
trator more direct responsibility for man-
aging disk space, but administering
UnErase takes some thought. Any activ-

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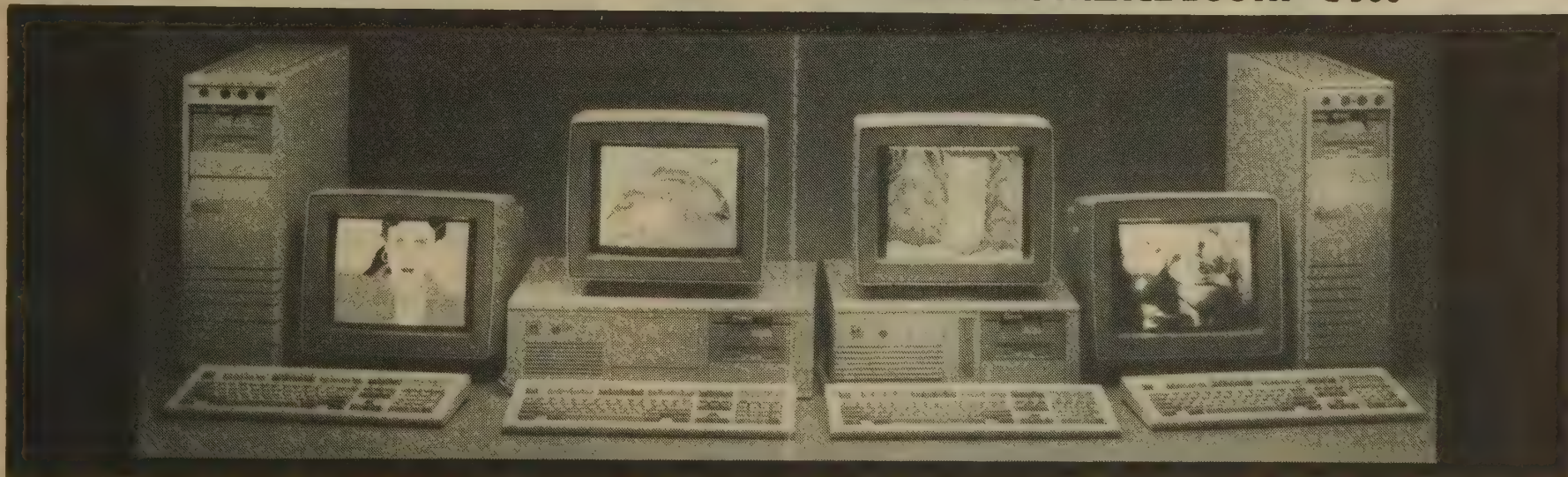
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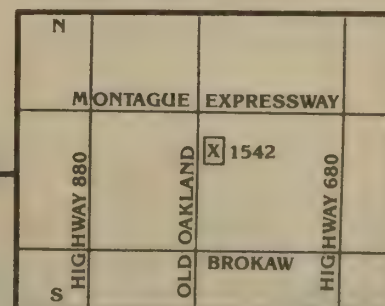
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ity that deletes or changes a large number of files (software upgrades or large program compilations, for example) may require that UnErase be turned off simply because there isn't adequate disk space to archive all the files that would be changed. It may not make sense to turn on erase protection for file systems in which temporary files are created, because these files will also be archived when they are deleted.

OTHER UTILITIES

Most of the other programs in the Norton Utilities for System V have UNIX counterparts. The Norton versions of these programs will certainly be of benefit to users new to UNIX, particularly those already familiar with the DOS version of the Norton package.

The Norton Shell Enhancer (nse) deserves special notice. This is an all-purpose tool for manipulating the video display from the shell. There is no built-in UNIX utility that has nse's capabilities, and it is an excellent tool for dressing up shell scripts with an engaging user interface.

The documentation and online help for the Norton Utilities is excellent. The authors have thoughtfully included a pamphlet introducing more or less painlessly the basics of disk operation and UNIX file system organization. Fortunately, no one watered down the warnings and cautionary notes that accompany some of the advanced features. Appropriately dire phrases like "untold havoc (unlimited data destruction)" describe the consequences of careless or clumsy use of the disk explorer.

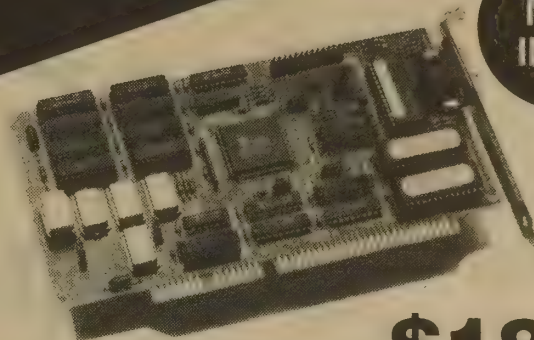
Apart from the high quality of the programs themselves, the Norton Utilities for System V are interesting because they cut across one of the great divides in computer culture. In the UNIX world especially, it is as though there really are only two kinds of people: those who want to be protected from making mistakes and those for whom mistakes are instructive in their own peculiar way. In one package, the Norton Utilities offer something for both groups: the convenience of erase protection coexists with de-bugging tool to satisfy the most adventurous of users. Things have come a long way since duv77. ■

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*A. 80x25 Text
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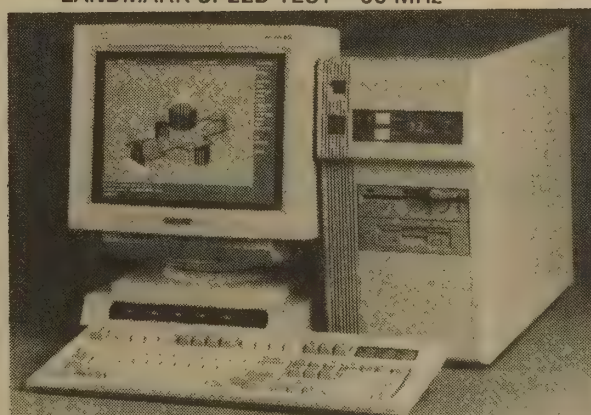


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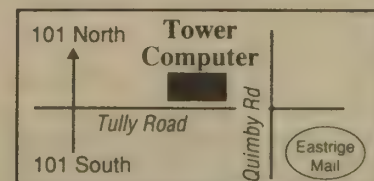
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User Training And Support Tools

**BY WAYNE
A. YACCO**

Over the past several months this column has suggested ways to ease network configuration and installation. Now, let's look at the last link in a successful installation—the user. I'm talking about support and training, not satisfying user needs (on the principle that those needs should have been addressed by involving the user as the first step of the planning process).

Support and training are similar to the last-

groups can exist on a network, and groups can be joined by daisy chaining. That lets any Viewer in a group be the simultaneous Host for another group—allowing an additional sixteen nodes to observe the first host. The depth of daisy chains is limited only by system performance (which eventually degrades to an unacceptable level as viewers are added).

As an example of how the Viewer and Host might be used for training, a distributed class could use Viewer to watch a

Network Eye only supports text mode, but it alone has the ability to cut text from one workstation and paste it into another. That can give it a definite advantage in workgroup applications.

LOCAL AREA NETWORKS

stage of quality control for any product: making sure that it is used properly. Otherwise, your network's full value will not be realized, and your customer will be dissatisfied despite the best equipment or design.

This month I'll share information on several network utilities that let you directly view and control remote nodes without leaving your own workstation. When this software is installed, your own display and keyboard are logically connected to the remote computer. You see what the remote user sees, and what you key enters the remote machine.

These programs are ideal for training an individual or a group. You can also show users how to manage resources. When a user can't figure out how to route his output to the right printer, you can take over his workstation and do it for him while he watches. Remote-control programs can also be used for workgroup conferences and distributed processing. If you're responsible for supporting a large network, with nodes all over hell and gone, you appreciate how much time and effort can be saved.

CLOSE-UP LAN

This offering from Norton-Lambert is typical. It consists of two parts, a "Viewer" and a "Host." The Host resides on nodes that are to be monitored. The Viewer resides on nodes which are to have access to, and control over, other nodes. These programs can be used in one-to-many or many-to-one applications. And both can be active on the same machine.

Close-Up has a limit of sixteen Viewers or Hosts in any one group. However, multiple

demonstration on an instructor's Host. An instructor's host session could disable the students' Viewer keyboards. The instructor could subsequently switch to Viewer (the students to Host) and observe each student during practice by toggling among them with a hot-key. Using Viewer, the instructor could disable the student's keyboard, and even the Host display, while providing corrections or individual instruction.

Close-Up LAN is compatible with Norton-Lambert's Close-Up product for remote operation over asynchronous modems. Close-Up has an Automated Communications Systems (ACS) feature which adds scripting for unattended operation. Together, Close-Up, Close-Up LAN, and a node with modem can provide a sophisticated communications server for any Viewer user.

This product runs on Novell IPX or NetBIOS networks including Novell, 3Com 3Plus, and PC LAN. Text video modes are supported through VGA, although graphics are currently supported only in CGA. Also, remote programs that operate over LANs tend to be sensitive to software versions and to particular adapter cards. Vendors, including Norton-Lambert, recommend using the latest version of protocols and major-brand adapters.

NETWORK EYE

Artisoft's entry is similar to Close-Up in many ways. Instead of Viewer and Host, it calls its nodes Master and Workstation respectively. But they are functionally similar. It too supports one-to-many and many-to-one opera-



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New Compaq VGA Mono 14"	235

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The Radius Two Page Display
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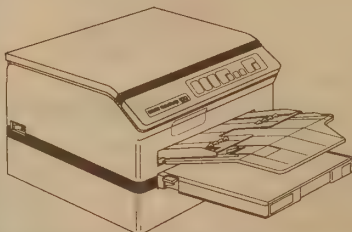
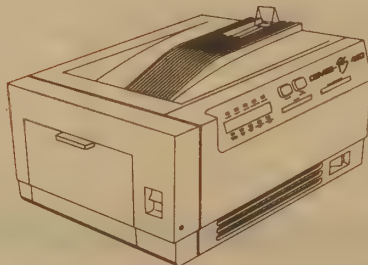
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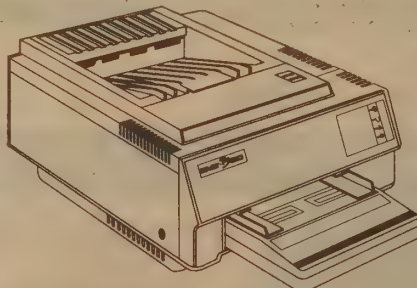
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Image Writer I	\$299
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Macintosh SE [20/1]

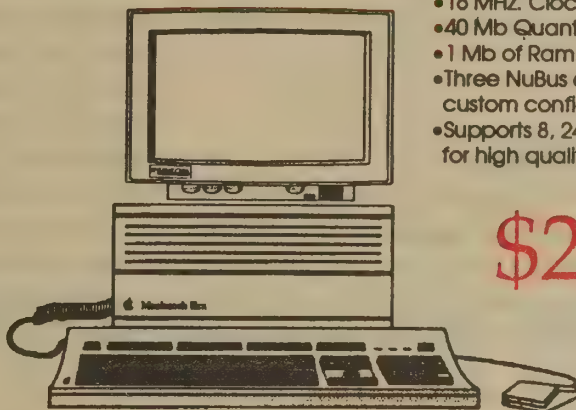
- 800k Floppy Drive.
- MC68000 Microprocessor.
- 8 MHz Clock Speed.
- 20 Mb Hard Drive.
- 1 Mb of Ram.
- One SE expansion slots for accelerators or large monochrome monitors.



\$1499[†]

Macintosh IICx [40/1]

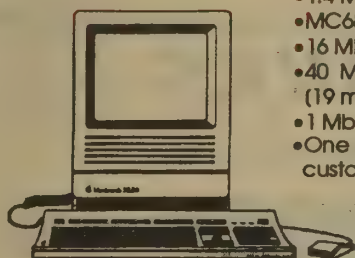
- 1.4 Mb High Density Floppy Drive.
- MC68030 Microprocessor.
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Macintosh SE/30 [40/1]

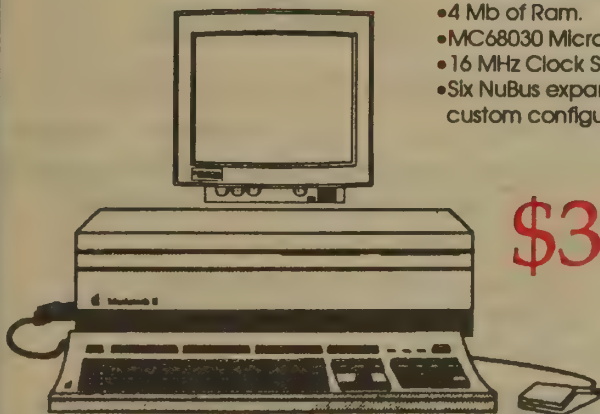
- 1.4 Mb High Density Floppy Drive.
- MC68030 Microprocessor.
- 16 MHz Clock Speed
- 40 Mb Quantum Hard Drive (19 ms access time).
- 1 Mb of Ram.
- One NuBus expansion slots for custom configuration.



\$2499[†]

Macintosh II x [80/4]

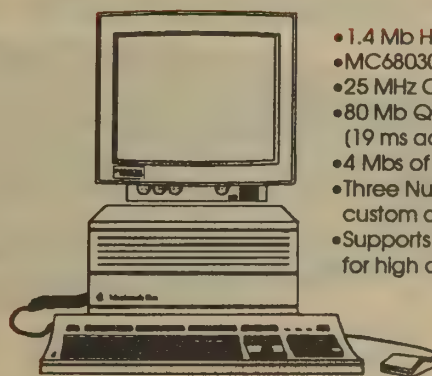
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- 4 Mb of Ram.
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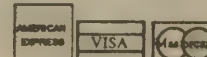
[†]Price does not include keyboard.

^{*} Price does not include keyboard, video board or monitor.

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BUSINESS SOLUTIONS

tion. Up to ninety-nine masters can access a single workstation, and as many as thirty-two workstations can be under the watchful stare of a master.

There are some significant differences too. Network Eye has the ability to display all of a master's workstations on a monitor at once. You can scroll through them and zoom in on whichever warrants closer scrutiny. This product only supports text mode, but it alone has the ability to cut text from one workstation and paste it into another. That can give it a definite advantage in workgroup applications. NetBIOS is required for any supported network including Novell, Artisoft's own Lantastic, and many others. The same caveats apply concerning protocols and adapters.

NETREMOTE+

Brightwork's product provides remote control via programs named NRCALL and NRLISTEN. NRCALL is the controlling end. These modules support only one-to-one direct connection, but they can be daisy-chained to

provide many-to-one connections. That makes the product more suitable to training, because large numbers of students can observe an instructor. Instructors must interact with students one by one, however.

Earlier versions of this product supported both IPX and NetBIOS, but version 4.1 has just been released in two flavors. The NetBIOS version is actually just about unchanged from 4.0.

NETremote+ 4.1 for Novell IPX, however, is substantially enhanced. In fact, it offers many of the diagnostic features of QAPLUS and System Sleuth which were discussed here a couple of months ago. It also has some network-monitor-type features, such as the ability to identify PCs, their connection names, physical layer types, network addresses, etc. Thus, the emphasis is very deliberately, and more narrowly, on network configuration and support. NETremote+ is a very strong contender for these two applications as a consequence.

The Novell version is also the first of these products to support VGA graphics. (The NetBIOS version continues to support

RESOURCES:

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PO Box 4085
Santa Barbara, CA 93140
(805)964-6767

Network Eye

\$295/network segment
Artisoft, Inc.
Artisoft Plaza
575 East River Rd.
Tucson, AZ 85704
(602)293-6363

Netremote+

\$350/file server
Brightwork Development, Inc.
766 Shrewsbury Ave. Jerral Center West
Tinton Falls, NJ 07724
(800)552-9876 (201)530-0440

Co/Session LAN

\$495/4 users
Triton Technologies, Inc.
200 Middlesex Turnpike
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(201)855-9440

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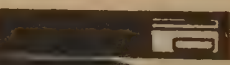
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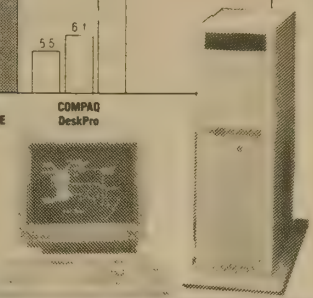
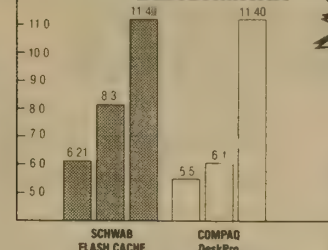
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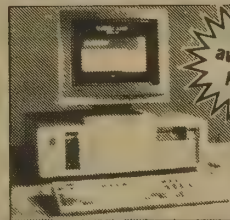
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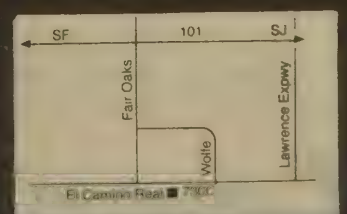
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BUSINESS SOLUTIONS

graphics only for CGA.) Brightwork also claims that its products offer an efficiency advantage over competitors. Rather than send entire screens over the network, NETremote+ sends only changes to the last screen.

Like the two Brightwork network monitors mentioned here last month, this package also bundles Co/Session, so only a node with a modem is required to provide remote control over asynchronous modems, or to create a network modem server. (Co/Session's script language is about \$100 extra, though.)

Triton Technologies also offers Co/Session LAN. It provides remote capabilities over a modem and access to the modem over a network. It is therefore something like a limited version of a remote LAN product that provides access just to a network modem server.

BLOCKING BIG BROTHER: THE PRIVACY ISSUE

Office workers and professionals have not traditionally been very involved in the organ-

ized labor movement, but privacy is emerging as a sensitive political issue for those using personal computers. All the vendors of potential spy products seem aware of the stress and other emotional injuries to which an Orwellian climate might lead.

Close-Up offers passwords which can block access, pop-up notification when a viewer is connected, and a private-connection option to limit conference participation. Network Eye has separate passwords for control over monitor and keyboard, and a pop-up notification (an eye-like symbol) when a workstation is being monitored. NETremote+ also offers passwords and the means to block access.

So there's no reason why privacy should be an issue if a company takes a few precautions, such as advising employees how these programs work, establishing a policy for their use, and teaching employees how to use their built-in safeguards. All of these products have good documentation—Close-Up and Network Eye are excellent in this respect—which will support this effort. ■

These software programs are ideal for training an individual or a group. You can also show users how to manage resources. When a user can't figure out how to route his output to the right printer, you can take over his workstation and do it for him while he watches.

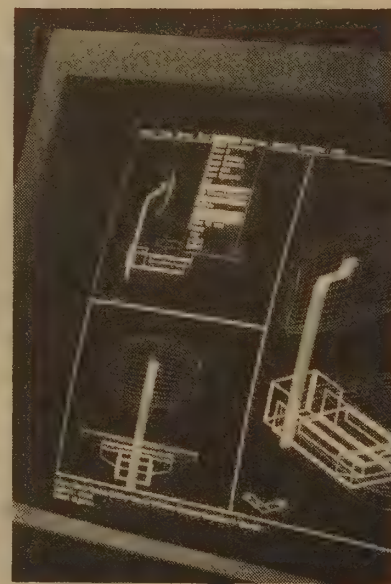
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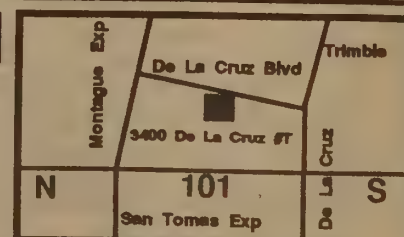
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Radius:

PUBLISHING AND BEYOND



Andrew Singer, Michael Boich and Steven Holtzman of Radius envision computer-based publishing for beyond text and graphics.

PHOTO: MICHAEL JAY

BY PAUL HOFFMAN

Radius was one of the first Macintosh hardware companies to hit the big time.

The first few years after the Mac was released, most established PC hardware companies stayed away completely or made only token gestures towards the Mac market. In mid-1986, a few people who had recently left the Macintosh project at Apple formed Radius with the hopes of capturing the nascent high end of the Mac market. Their vision was to bring the features of high-performance graphics workstations like those produced by Sun and Silicon Graphics to the Apple platform.

From its first product, a full-page display monitor introduced in 1986, which helped make the Macintosh the machine of choice for desktop publishing, Radius has expanded its line to include such diverse products as 24-bit color hardware, CAD tools, systems for PC users, the horizontal/vertical Pivot monitor, and, most recently, RadiusTV, an integrated television/graphics subsystem for the Mac II.

Radius went public last month after only four years. The company had initial- and second-round venture capital but plenty of cash, and the public offering went well despite the market's skittishness about oil prices and the chances of war.

MicroTimes interviewed the three principal executives—Michael Boich, president, CEO, and Apple's original software evangelist for the Macintosh; Andrew Singer, VP of engineering, who's in charge of all Radius hardware and software development; and Steven Holtzman, VP of marketing—in their offices in San Jose.

The desktop publishing market has grown a lot. Where do you see the market going, and what will Radius's role be in that market?

Michael Boich: We just came back from our public offering roadshow where we were marketing the company and the business to people who didn't necessarily understand it well. We presented four market segments that we target as a company, and none of them was desktop publishing. From our perspective, there's really just color publishing and monochrome graphics.

Color publishing is a rapidly growing and high performance market, and I'll talk about that a little later. Monochrome graphics is much bigger, and it has really converged with the rest of Macintosh computing. This is really business productivity, which most people feel is just the general high end of the market. We feel that what others call "desktop publishing" is really just part of business productivity. We serve that with products like the Pivot and our two-page monochrome monitors. It is still an important part of our business, probably over half of our sales today.

The products that we originally intended for desktop publishing, like the full-page display, and two-page monochrome display, turned out to be in much wider demand than just desktop publishing, and we followed our customers in their uses.

Andrew Singer: It's funny. You take a product like Excel—it has all these features for using pretty fonts and making presentations. Is it desktop publishing or business productivity? I think that the two have really merged.

Boich: Steve Jobs predicted the death of desktop publishing at the very first Seybold

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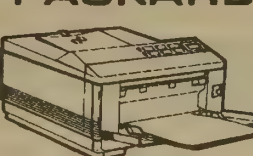
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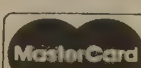
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Publishing show, the same show where we introduced our first product. He created a big hubbub by saying that all this functionality would get merged into word processors. He wasn't quite right, of course, but the trend is certainly there. Almost every application has some features that help you produce a beautiful document.

Steven Holtzman: You can't look at desktop publishing as a distinct segment because it really isn't distinct anymore. Anything that you or I might be doing with a laser printer qualifies for the same requirements as the original "desktop publishing."

Singer: "Word processing" has really become "word publishing" in many packages.

MICHAEL BOICH:
"Steve Jobs predicted the death of desktop publishing at the very first Seybold Publishing show. He created a big hubbub by saying that all this functionality would get merged into word processors. He wasn't quite right, of course, but the trend is certainly there."

You're primarily in a Macintosh market right now. When do people decide to get off of either the small built-in Mac screens or the small Mac II screens, and move to one of your products, which generally have larger screens?

Holtzman: As soon as they see one. [laughter]

Boich: People who are composing lots of pages on a Mac are essentially doing desktop publishing, whether or not they or we call it that. It is much easier to compose a page when you can see all the design elements on a page at actual size, and that is very clear to people as soon as they see a large-screen system. By the same token, people who are doing spreadsheet analysis all day love to see a year's worth of data at one time instead of having to scroll back and forth all the time.

Do you find that Radius is being specified as equipment on initial purchases, or that you are mostly being looked at for upgrades?

Boich: It really depends on the platform. On Mac IIs, about 80 to 90 percent of the time they buy our equipment when they buy the CPUs, because there is no built-in display. The other 10 or 20 percent buy a small display, regret it, and later upgrade.

On systems with built-in displays, of course, the initial numbers are much lower, but the upgrade to a bigger display comes much sooner than you might think, sometimes a week or two later. Frankly, we continue to surprise ourselves with the number of systems that we sell to those kind of people.

When the SE/30 came out, for example, we had a big debate about whether we should do Pivot or two-page display for it. We did both, and they have sold well in excess of any numbers we predicted. You can always make a case that you should buy a IIcx if you're going to add a big display, but the world isn't that rational or full of foresight.

Holtzman: There is clearly still a strong following for the compact Macs.

Let's talk about RadiusTV. It seems like a departure from your other products in that not that many people are using video in their daily work. What made you do RadiusTV?

Boich: I mentioned before that we have this whole line of products for color publishing. We have a phrase for that around here: color systems. If you take the very first 8-bit color displays that we made, every subsequent color develop-

ment we have made around here, like color QuickDraw and color calibration, can be added to those systems. We are trying to build this family of color products.

You can look at RadiusTV the same way. You can take any of the 24-bit two-page displays that we have sold, or the 8-bit if you want lower color quality, and add RadiusTV.

RadiusTV is not really for people doing video, it is for people using color images. Certainly, there are lots of images out there on video and the broadcast TV world. You can acquire lots more images using video cameras, either still-frame or camcorders. It works just like a huge funnel to get lots more

color images into your computer.

Holtzman: It really fits the people who are buying our color systems these days. It's a natural evolution for them to do image capture for newspapers and publishing people. RadiusTV is not really a new market, although there are some new opportunities that we are exploring. Andrew and his team put lots of features in there like closed-caption TV that open up totally new possibilities beyond our current markets.

Singer: When we looked at the whole video arena, we saw that there were many opportunities to make things better. One of the opportunities, curiously enough, was just to add broadcast tuning. In fact, the original design spec for that was just to be able to tune to channel 3 or 4, because it makes it easier for ordinary people to connect the system up since they don't need to make many choices.

It turns out that doing channel 3 and 4 is hard enough that if you're going to do just those two, you might as well do all of them. Basically the same device that does those will do all of them. At that point, you basically have a television with electronic channel switching. When you have that kind of capability, you start to ask "I wonder what I can do with that if I have a brain handy" since this is hooked up to a computer.

For example, you look and see that you have this closed-captioning information that is in ASCII, something that computers understand. Computers don't understand pic-

ANDREW SINGER:
"People pay real money for this stuff. In order for them to want to do that, they need to get the feeling that they're getting something that is worth it. That means, usually, solving some specific problem and solving it well."

tures, they don't understand people talking, but they sure understand ASCII.

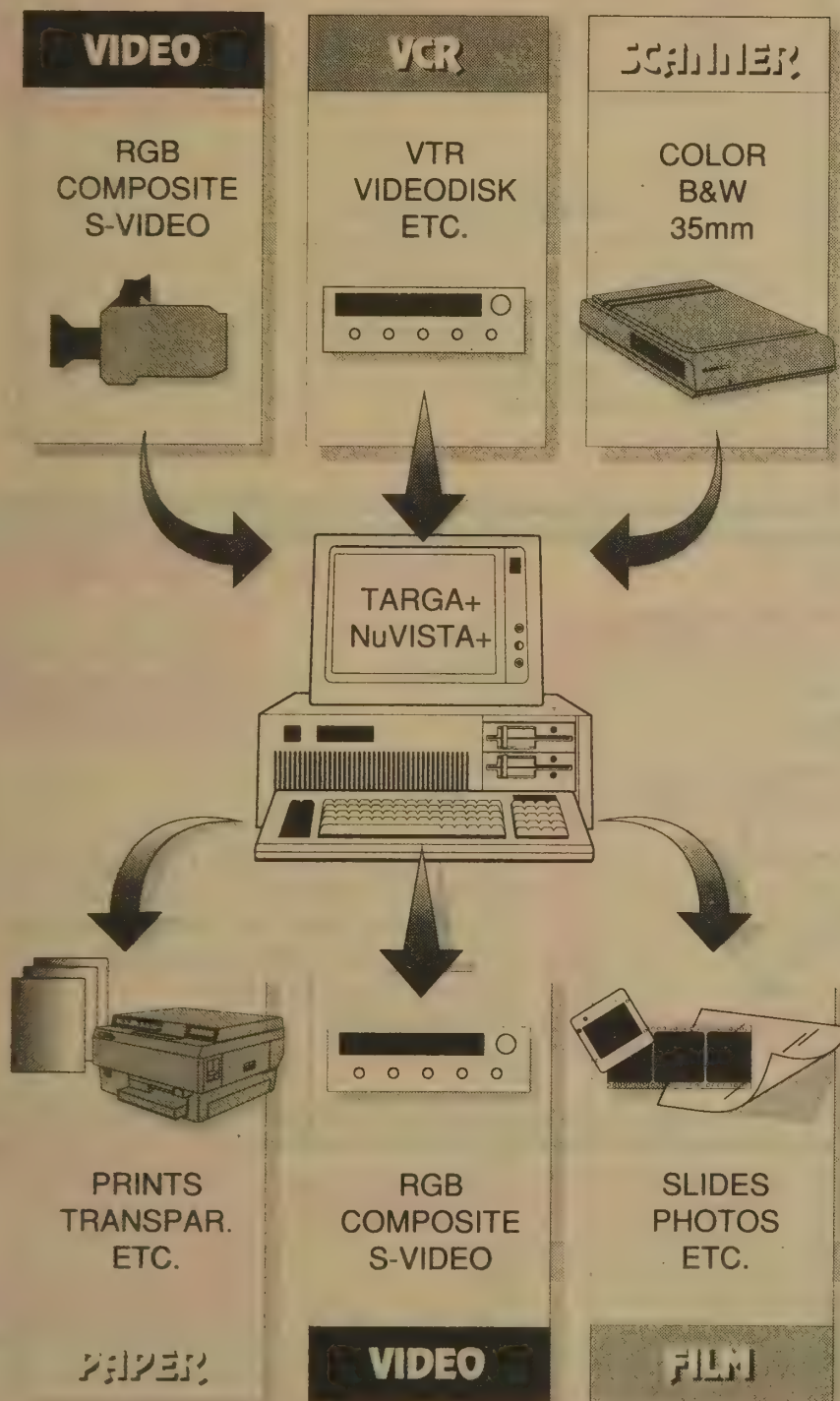
We looked at it and said to ourselves that we should have a lot of tools, hand them out to users and developers, see what they do with them. Software developers have an immense amount of ideas about what to do with these technical capabilities; I think we

continued on page 75

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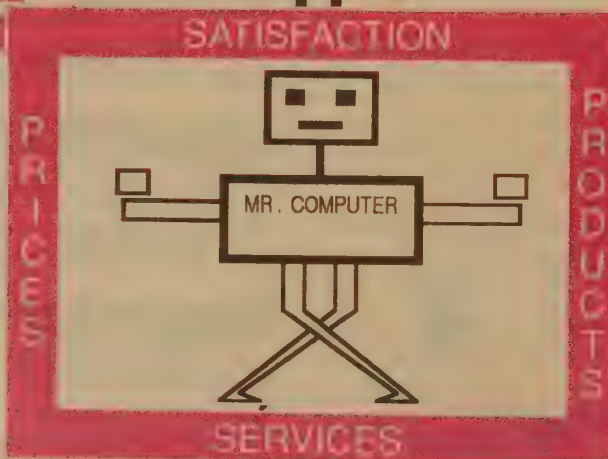
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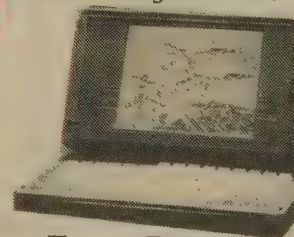
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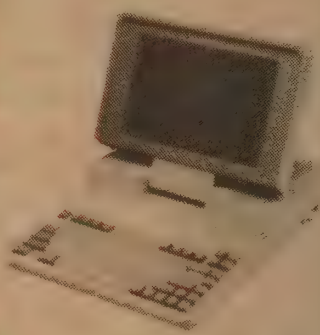


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Radius *continued from page 70*

have been rewarded in numerous ways that we have seen and many that we haven't.

Holtzman: We started as a direct extension of our color systems into publishing, but the merging of computers and television represents opportunities that we don't even

targeted at a specific group of applications, not a group of people.

Holtzman: Our philosophy has always been to look at a class of end-users and their applications, then work back to an umbrella system that can help them.

Singer: If you talk to [MacroMind's] Marc Canter, he'll tell you that RadiusTV has most of the features that he wanted to see in a product to be used with MacroMind Director. It has electronic control of a multiplicity of sources. It has integrated audio so you don't have all the complicated cabling to set up. It has industry-standard connectors. It has overlay capabilities.

And it's 16-bit. It is very important to have a high quality image but still be able to do animation that programs like Director want you to be able to do, using the horsepower of the Mac.

Look, people pay real money for this stuff. In order for them to want to do that, they need to get the feeling that they're getting something that's worth it. That means, usually, solving some specific problem and solving it well.

You mentioned money. Radius has never been known as the low-cost leader. The initial magazine announcements knocked on RadiusTV for the price relative to the competitors. Is this a big concern of yours?

Boich: It goes back to the question of solving problems for customers. If you're solving a problem for somebody, they will pay a lot of money for something that completely solves the problem as compared to the thing that *almost* solves the problem.

Singer: Although other companies delivered a video solution before we did, our video capability is really the only one that integrates with the existing products as a building block. That's a very different way of looking at products.

It's harder to do it that way, and it comes out later, but people who have the necessary previous piece are our customers, the people we always want to treat the best. What we tell our customers about video is, "You bought our product before, now we have a piece for you that makes it more valuable. That's why you spent more money on your Radius product a few years ago."

It is not an accident that our products are more expensive. All those products have NuBus slave block transfer capability. It costs a little more to do that. When the customer first bought the product, they bought

STEVEN HOLTZMAN:
"Our philosophy has always been to look at a class of end-users and their applications, then work back to an umbrella system that can help them."

imagine today.

Singer: I think it is safe to say that not a few RadiusTVs have been sold just to watch television while working. Maybe they are watching the stock market numbers go by, and they want to watch CNN at the same time. There is a surprisingly diverse range of users.

Holtzman: Mike [Boich] is *not* using his RadiusTV for color publishing.

Singer: That's right: it's a productivity dehancer.

This is interesting, because when I wanted you to talk about "desktop publishing" you kept pushing on the fact that, no, it's just publishing. For the RadiusTV, you are not using the overhyped M-word, "multimedia"; you call it "color publishing."

Boich: Some people have a product strategy, which is to do whatever they are writing about in *MacWeek*. We try to stay away from that, but we also try not to be overly contrarian. In fact, we did use the word "multimedia" in our description to investors for our IPO; I don't know if that was good or bad. It is a dangerous term in that it is very amorphous.

But you don't seem to be targeting RadiusTV to multimedia producers.

Boich: No. We haven't done our last product in that area, however. Many people look at RadiusTV and say, "Gee, how do you do video output with RadiusTV?" RadiusTV is definitely an input product. We are liable to do some output products, but they will be

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an insurance policy that they wouldn't have to give up what they had when things that need advanced hardware come out in the future.

Holtzman: The 16-bit decision is a good example of how we look to the customers and what they want. We talked to lots of

MICHAEL BOICH:
"Some people have a product strategy, which is to do whatever they are writing about in MacWeek. We try to stay away from that, but we also try not to be overly contrarian. In fact, we did use the word "multimedia" in our description to investors for our IPO; I don't know if that was good or bad. It is a dangerous term in that it is very amorphous."

people who said "We don't want 24 bits of color because it slows us down too much for animation." Animation is obviously something that many people want to do. They told us that 16-bit is the right amount for multimedia applications such as Director. Of course, if you go to a video production environment where you will be sending things out to video tape, you get different answers. We try to look at a specific application of our users and we make different choices than our competition on them.

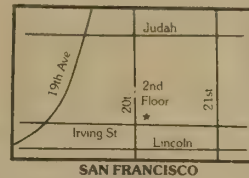
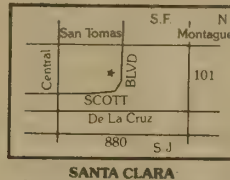
Singer: Look at the kind of information you are bringing in. If you have an NTSC source, the standard source at least in this country for video images, you don't have more than 16 bits' worth of stuff in there. To go ahead and do the engineering-driven 24-bit solution and spend all the time and disk space for the images and such is sort of a ludicrous thing.

On the other hand, if you're going to make video, 16 bits is just not enough. If a com-

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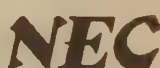


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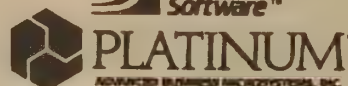
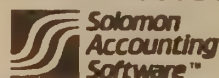
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pany makes one product for both sides, you are going to burden it with a design decision that works for one side of the equation but not the other.

People look at Radius as a hardware company, although you add lots of software to your products.

Singer: I don't see hardware and software as being radically different. There is an enormous similarity between computer

pretty good at it. You'll see some things in the future that look just as innovative and interesting as what you see in our Mac products.

Singer: Of course it doesn't hurt that Windows is looking more and more like the Mac every day.

Are you going to try to clone most of your Macintosh products to the PC? Does it seem like your market is there?

Boich: You have to be very careful to think about what will translate between the markets. The fact that a person has chosen to buy one platform or the other tells you something about that person's preferences for products. We certainly are not going to take all of our products over one for one.

Singer: For example, the first PC product we introduced, the two-page monitor, is not a clone. It has built-in VGA capabilities and different resolutions, and this reflects the nature of the PC market.

Boich: Lots of the color publishing applications that you see on the Mac are going to show up eventually under Windows. When they do, the hardware demands will be the same as they are now on the Macintosh.

Where do you expect to be or want to be in five years?

Boich: Now that we're publicly traded, we have to learn how predictive we are supposed to be to some of those questions. We don't see the end in sight in this business. You will see a wider range of products in color publishing as more people come into that market. Right now, we have a single CAD product, and I'm sure we'll have more in that market as it matures.

Singer: You will see more of a concentration on circuit integration. Radius got off the ground with PAL technology and leveraged that technology effectively for a very long time.

Look at the RadiusTV board: it has seven programmable gate arrays. That's about one hundred thousand gates, worth of logic. That's more complex than a Mac II. We'd like to see that migrate to a single chip. The ability to work in a more concentrated fashion is key to what we do.

The software side is going to grow too. Sometimes lots of software and a little extra hardware can create an interesting brew. Pivot is as much a software achievement as a hardware achievement. If we can keep that magic going, you'll see lots more products from us that keep us market leaders. ■

MICHAEL BOICH:
"You have to be very careful to think about what will translate between the Mac and PC markets. The fact that a person has chosen to buy one platform or the other tells you something about that person's preferences for products."

software and digital software. It's really more of a matter of implementation. There's a great opportunity to make tradeoffs there. I look at the software content of a hardware product as a clue to the value of the product.

Most people who were familiar with hardware-based graphics systems and saw the Macintosh at its introduction were absolutely sure that there was special hardware in the Macintosh to do graphics. People insisted to me that there was special hardware, and I assured them that no, there was just some extremely clever software. That shows how powerful software can be.

Boich: When I worked at Apple, we were up at Microsoft in early 1982. Bill Gates was saying, "You mean there is really not special hardware for the cursor?" Andy Hertzfeld had made windows and a cursor run really well on an Apple II and was about to say so: "Oh, that's nothing, you can do it..." Steve Jobs jumped in and told him to shut up.

And look where we are today: Windows 3.

And now you're in the PC environment with your two-page monochrome display. Even though you're primarily a Macintosh company, you have to write software for the PC in environments like Windows 3. What do you think?

Boich: Well, we have some people who are

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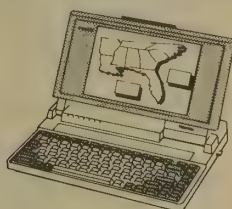
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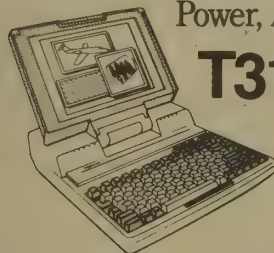
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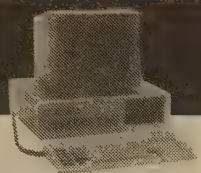
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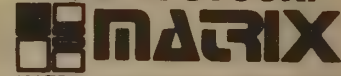
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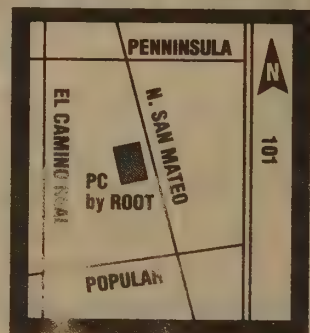
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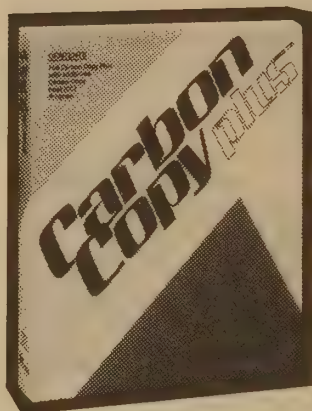
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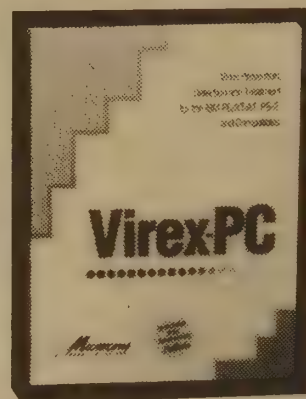
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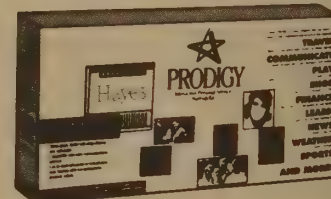
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CONFERENCE SCHEDULE

TUESDAY, OCTOBER 2

■ 9-10:30 AM

Publishing & Computing in the '90s

Opening presentations

Moderator: Jonathan Seybold

John Warnock, Adobe

Bill Gates, Microsoft

Steven Jobs, NeXT

■ 11 AM-12:30 PM

Publishing & Computing in the '90s (continued)

Moderator: Jonathan Seybold

Howard Woolf, Digital Equipment Corporation

James Lennane, DeScribe

■ 2 PM-3:30 PM

Computing Environments for Publishing

Moderator: Craig Cline

Scott McNealy, Sun Microsystems

J. Paul Grayson, Micrografx

Charlie Oppenheimer, Apple Computer

Lucy Baney, IBM

Color Technologies 1

Color Portability & Color Space

Moderator: Jonathan Seybold

Brian Jordan, Crosfield

Jim Kneeland, Kodak

Efi Arazi, EFI

Fred Schwedner, Adobe

■ 4 PM-5:30 PM

Future of PostScript

Moderator: Jonathan Seybold

John Warnock, Adobe

Cal Bauer, Microsoft

Paul Brainerd, Aldus

Bob Downs, Phoenix

Publishing Without Paper:

Multimedia/Interactive Retrieval 1

Moderator: David Baron

Payson Stevens, InterNetwork

John Scull, MacroMind

WEDNESDAY, OCT 3

■ 8:30-10 AM

Color Technologies 2—Color Screening & Output

Moderator: Jonathan Seybold

Georg Pfeiffer, Hell

Stephen Schaffran, The Color Group

Lars Borg, Adobe

Tim Gill, Quark

Publishing Without Paper 2

Moderator: David Baron

Charles Goldfarb, IBM

Jack Butler, Butler Graphics

Kathleen Wilson, Bank Street College

■ 1:30-3 PM

Video Technologies Tutorial

Moderator: David Baron

Rob Cook, Light Source

Steve Vollum, E-Machines

Scott Billups, Billups Communications

Color Output Tutorial

Moderator: Jonathan Seybold

David Spencer, David Spencer & Associates

Paul Beyer, JCH Color

Publishing Environments: The User's View

Moderator: Craig Cline

Peter Jerum, Novell

Brian Anderson, ACP/Context

Standard for Electronic Information Interchange

Moderator: Mark Walter

Joanna Vanderwilt, Boeing

Bob Travis, Digital Equipment Corporation

Yogen Dalal, Claris

Yuri Rubinsky, SoftQuad

■ 3:30-5 PM

Building Systems (Case Studies)

Color Production

Moderator: Craig Cline

Drew Robbins, All Systems Color

David Lynn-Overbey, CATPRO

Newspapers and Magazines

Moderator: Bill Solimeno

Don Skaggs, Worcester Telegram & Gazette

Marcel Corderch, El Sol

Tamara Westmark

Color Tradeshops vs. Desktop Production

Moderator: Jonathan Seybold

Ray Hammond, The Last Word

Sanjay Sakhuja, Digital PrePress International

Marketing and Advertising

Moderator: Kevin Howard

Bruce Kaplan, Mind Over Macintosh

Elizabeth Wood, Egelin, Wood & Zuber,

Electronic Publishing & Design Center

Michael Astrachan, Kuhn & Wittenborn

■ 7-9 PM

Font Free-for-all, 4th ed.

Moderator: Peter Dyson

Eliyezer Kohen, Microsoft

Günter Zorn, Linotype

Louise Domenitz, Bitstream

Cynthia Hollandsworth, Agfa/CG

David Berlow, The Font Bureau

Color Free-for-all, 1st ed.

Moderator: Jonathan Seybold

Ray Hammond, The Last Word

Brian Jordan, Crosfield

Mike Templeman, Aldus

Alan Darling, Quad Graphics

THURSDAY, OCTOBER 4

■ 8:30-10AM

Color Technology - 3 Compression

Moderator: Jonathan Seybold

Alain Rossman, C-Cube

Eli Israeli, Scitex

Workgroup Applications & Environments

Moderator: Craig Cline

Jamie Lewis, Clarke Burton Corp.

Phil Gilbert, Gilbert & Associates

Tim Gill, Quark

■ 10:30 AM-12 NOON

Design and Production Links

Moderator: Jonathan Seybold

Greg Galle, Aaron Marcus and Associates

Roger Black, Roger Black Inc.

Lance Hidy, Lance Hidy Associates

Corporate Publishing: Keeping Afloat in a Sea of Information

Moderator: Mark Walter

Dennis Andrews, Xerox

Geoff James, Digital Equipment Corporation

Chuck Cooper, IBM

■ 2-3:30PM

Closing Presentation

Paul Brainerd, Aldus

David Liddle,

Metaphor Conference Overview & Wrap-Up

Jonathan Seybold

■ 4-5:30 PM

Special Interest Sessions

- **Mainframe Publishing:** P.C. McGraw, GenText
- **Getting the Pictures Right in PostScript:**
Peter Fink, The LaserLetter
- **Distribution & Channels:** Joanna Tamer, S.O.S.
- **IBM Font Architecture Strategy:**
Dana Prestigiacomo, IBM

FRIDAY, OCTOBER 5

Vendor Tutorials

Working with Digital Creative Artists,

Designers & Vendors:

Michael Scaramozzino, DreamLight

PostScript User's Bull Session: Robert

Coundouris, Lawrence Livermore Laboratory

Training: Bruce Kaplan, Mind Over Macintosh

High End Desktop Publishing-A Case Study:

Susan MacCaul, The Publishing Access

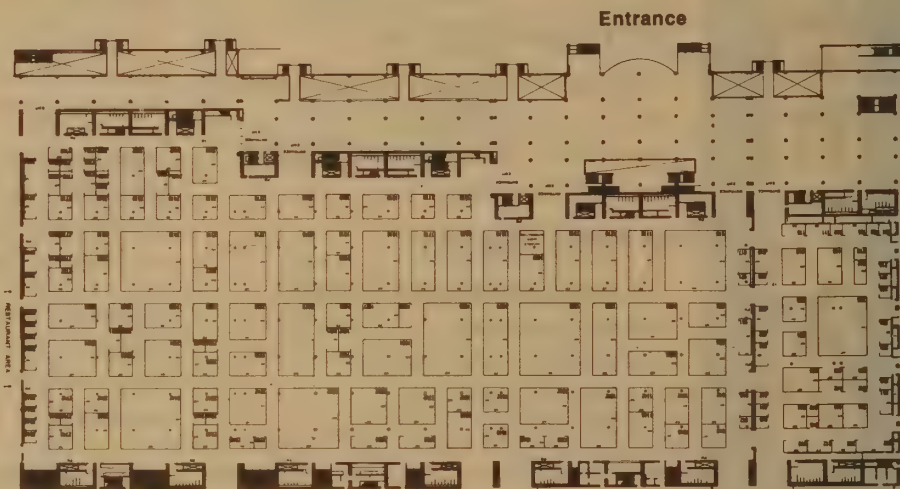
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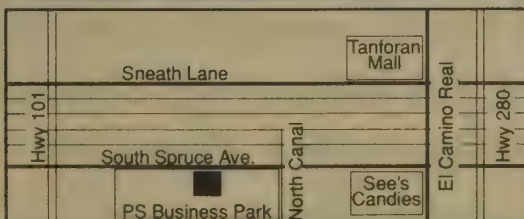


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Voice Hijacks

The Information Age

The Uncharted World Of Audiotex

BY BROCK N.
MECKS

While few of us were looking, the information age was hijacked. Industry pundits thought hi-tech modems, screeching their carrier tones late into the night, would set the precedent for the "info-revolution." They were wrong. A much maligned low-tech device is now taking the information age by storm. It is a device more common than the fax machine and only slightly more difficult to operate than a television. And it's sitting not more than four steps away from anyone reading this column: the telephone.

Bored? Lonely? Curious? Just press "976-Anything" and you're transported into the fiber-based world of "audiotex." Using a system so simple a five-year-old can access stock quotes or a White House press briefing, purveyors of the 976 industry (and their long-distance siblings, the 900 number services), have succeeded where the online, computer-driven videotex market has failed.

In just under two years the audiotex industry is a mass market with mass appeal and a billion-dollar-plus bottom line. In fact, the audiotex industry is expected to ring up a net income of \$3 billion by 1992. It's not surprising then, that everyone wants a piece of the pie. Trouble is, that pie may be more than some have bargained for.

You can already hear messages ranging from New Kids On The Block to Santa Claus. And with audiotex, not only is the medium the message, it can also be the massage.

IN THE BEGINNING THERE WAS PHONE SEX

Contrary to Richard Gere's line in *Pretty Woman*, you can't find a Julia Roberts look-alike by dialing 976-BABE. You can, however, get an earful of moans and groans otherwise available any night in a cheap hotel with thin walls. The advantage of the hotel is that you know the cost up front; with audiotex, the most you can expect is a Really Big Phone Bill.

Like the transition of the porno industry from 25-cent peep shows to \$25 bring-home video tapes, providing an earful from a phone call turned out to be a goldmine.

The phone sex industry had its humble

beginnings back in 1986 when *High Society*, a New York-based skin mag, set up an answering machine that played a message promoting the magazine's "coming attractions." The voice was seductive, the messages slightly tantalizing, and the response overwhelming. Thousands of calls began streaming into the upper Manhattan exchange. Soon the magazine added more answering machines and turned the messages into "adult fantasies."

It wasn't too long before the numbers began showing up on bathroom walls: the scheme was a hit. And at its peak, the magazine has over a hundred answering machines cranking out fantasies, all recorded by the husky-throated publisher, Gloria Leonard.

When the sex chat scheme went national, with 976 numbers, the controversy also took off. Middle America wasn't ready for its kids to get their sex education by telephone. And good ol' wholesome Ma Bell came under sudden attack for profiting (greatly) from people providing these sexually explicit services.

The controversy that ensued caused a number of responses. The phone companies, in an effort to stall the masses from storming their corporate offices, banished all "undesirable" services to different exchanges. Others offered to block any particular exchange.

But the First Law of Pornography states that smut can neither be created nor destroyed—it simply changes form. Thus, many local 976

adult lines have become national 900 lines. But industry experts expect most of the growth in audiotex over the next few years to be in non-explicit 900 services.

AUDIOTEX: A NEW FORM OF PUBLICATION

Magazines and newspapers are natural players in the audiotex game, since they already are in the information business. The *New York Times* provides a 900 service that gives as many as three answers to its crossword puzzles (which should tell you something about the American public). I'd like to see a service that gave three hints about solving world hunger or the homeless problem or my local garbage dump.

All this listening makes for fast bucks. Fast, dumb bucks—some services are just plain stupid; some services give incredibly mind-numbing advice, such as the Pet Line: "Wild animals rarely make good house pets." Some live and die faster than you can be billed for them. (Make no mistake, though, you will pay for the calls.)

A CALL FOR STANDARDS

If all this sounds like it was tailor-made for the likes of P.T. Barnum and any ilk of con man, you're right. But the Information Industry Association, the group that lobbies Congress

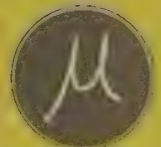
Using a system so simple a five-year-old can access stock quotes or a White House press briefing, purveyors of the 976 industry (and their long-distance siblings, the 900 number services), have succeeded where the online, computer-driven videotex market has failed.

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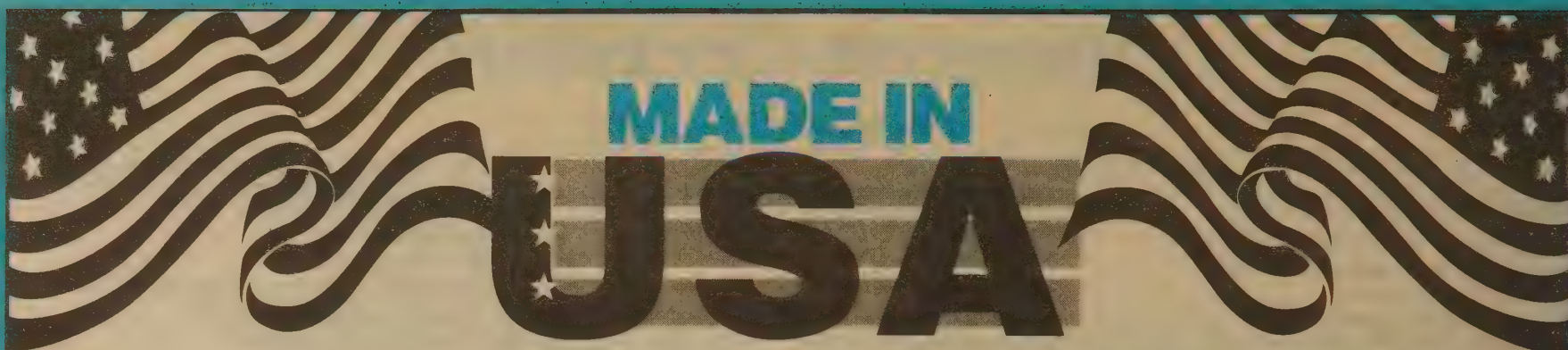
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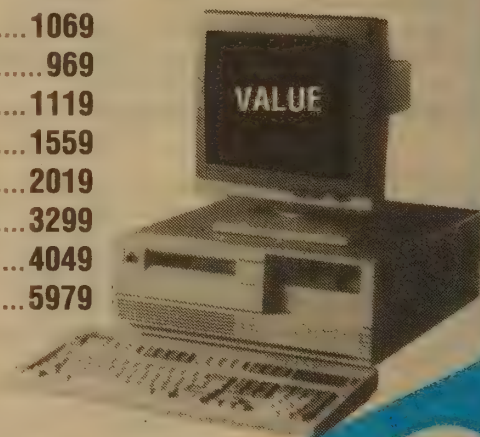
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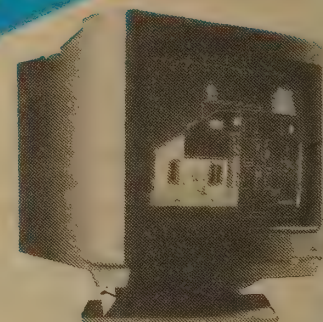
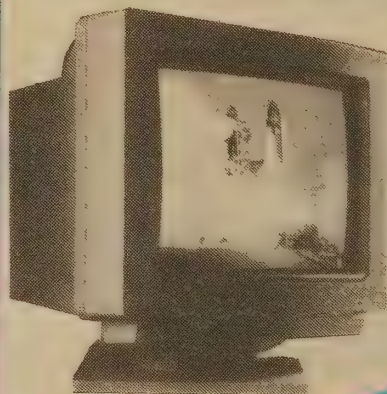


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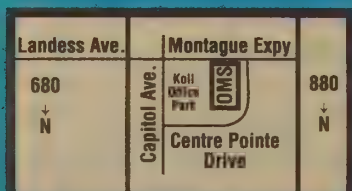
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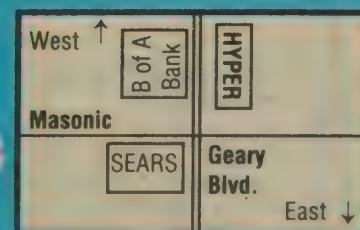
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TELECOMMUNICATION

in behalf of this group, doesn't want you to think so. They'd like you to believe the entire industry is forthright and upstanding. Truth is, it's caller beware.

The IIA has drafted what it *hopes* will become accepted as a standard of practice. A spokesman for the IIA told me: "We've developed these 'Standards of Practice' as a voluntary guideline. There's nothing hard and fast here. They're intended to serve as a guide to create the conduct which experience has shown to be wise, foresighted and constructive."

For who? The facts are, there is no regulation on this group; there might never be. Take a look at the proposed standards and read between the lines:

Preamble: Those services which offer information and entertainment programs shall strive to present programs which are innovative, timely, thought-provoking, creative, intelligent and factual. We recognize that these services are, in most instances, universally accessible, and thus great care must be exercised as to content. Particular attention

is to be paid wherever children may be involved. We recognize that we have a special responsibility towards children.

- The presentation of violence, either physical or psychological, shall not be exploitative or excessive, and shall truthfully present the consequences. The use of violence for its own sake shall be avoided. In general, the treatment of violence or associated criminal activities shall always convey the negative social and human effects.

- Except for truthful and factual information, any presentation dealing with narcotics or the use of illegal drugs shall highlight the destructive elements and discourage use.

- The invitation to participate in or otherwise encourage the promotion of any illegal action by others shall be avoided.

- Demeaning or disparaging remarks shall be avoided.

- Specific attention shall be observed to refrain from the use of obscene, indecent or profane language as defined by applicable federal and/or state law.

- The presentation of any matter dealing with sexual material shall be treated with discretion and sensitivity. Special care shall be taken to avoid exploitative or irresponsible themes.

- Programs offering professional advice or self-help material shall be presented in conformity with law and recognized professional standards. Explicit care shall be exercised to prevent false expectations.

- Programs shall avoid false or misleading statements, visual or verbal.

- Contests shall be conducted in accordance with all applicable laws.

- Programs dramatizing current affairs or social issues shall be presented as dramatizations and care shall be taken to inform the caller that the program is a dramatization, not a real news story.

- News reporting shall be factual, fair and unbiased.

- Editorials, commentaries and analyses shall be so identified.

- Political, fundraising or religious programs shall be clearly identified as such. ■

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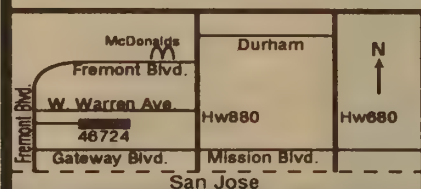
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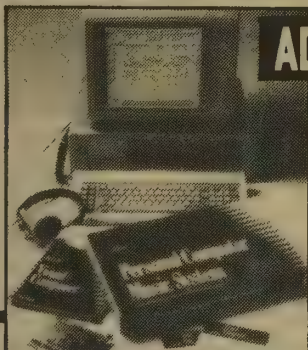
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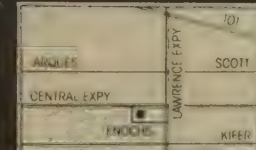


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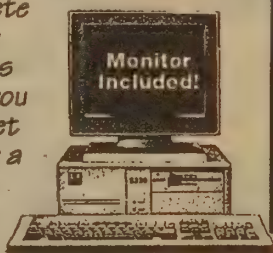
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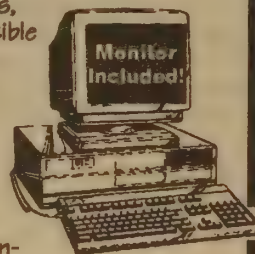


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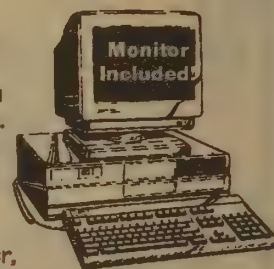
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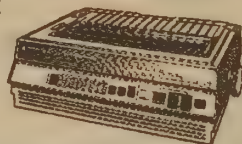
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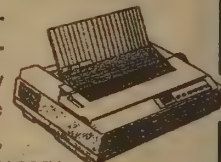
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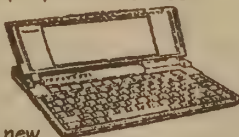


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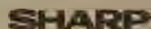
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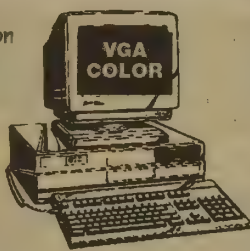
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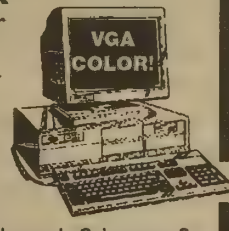
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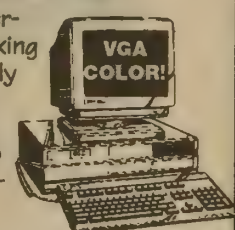
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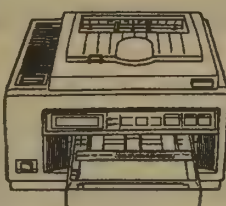
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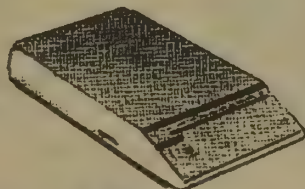
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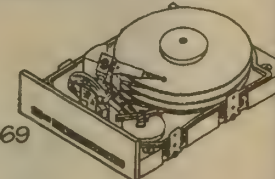
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TI Goes Portable

The Texas Instruments TravelMate LT286 Model 12

BY
ED KAHN

Long a player in the small computer marketplace, Texas Instruments has made its first entry into the laptop world with a series of 80C286-based lightweight machines.

The TravelMate LTE series includes three models, of which the Model 25 and 45 offer VGA display and internal hard disks. The Model 12, which I reviewed, is the most innovative, but not the most powerful. I like its look and feel. Like many other units coming onto the market, it incorporates a modular design, but it's different from any other offering I've seen.

Weighing in at 6.7 lbs., the Model 12 is compact. Its dimensions are roughly 8"x11"x

3". The carrying case (\$89) has room for the computer and a bunch of accessories. Because this computer is a unique design, it will not fit conveniently in any case other than the fine one that TI offers.

BASIC CONFIGURATION

The basic computer (\$3199) includes 1Mb of RAM and a 20Mb hard disk, and *no* floppy drive. This means that you must rely upon the LapLink transfer utility built into ROM; a built-in serial port allows you to transfer files in and out of the computer.

While powerful and offering the option of running at 12MHz, the basic Model 12 is stripped down to shave weight off the unit.

Ports include the serial port, a parallel port and a CGA port for connection of an external monitor. If you want a floppy drive, you can buy one for \$299; it attaches to the right side of the computer and also includes a parallel port. The basic unit, without the drive added on, is small and perfect for traveling. There's room in the carrying case for the floppy drive.

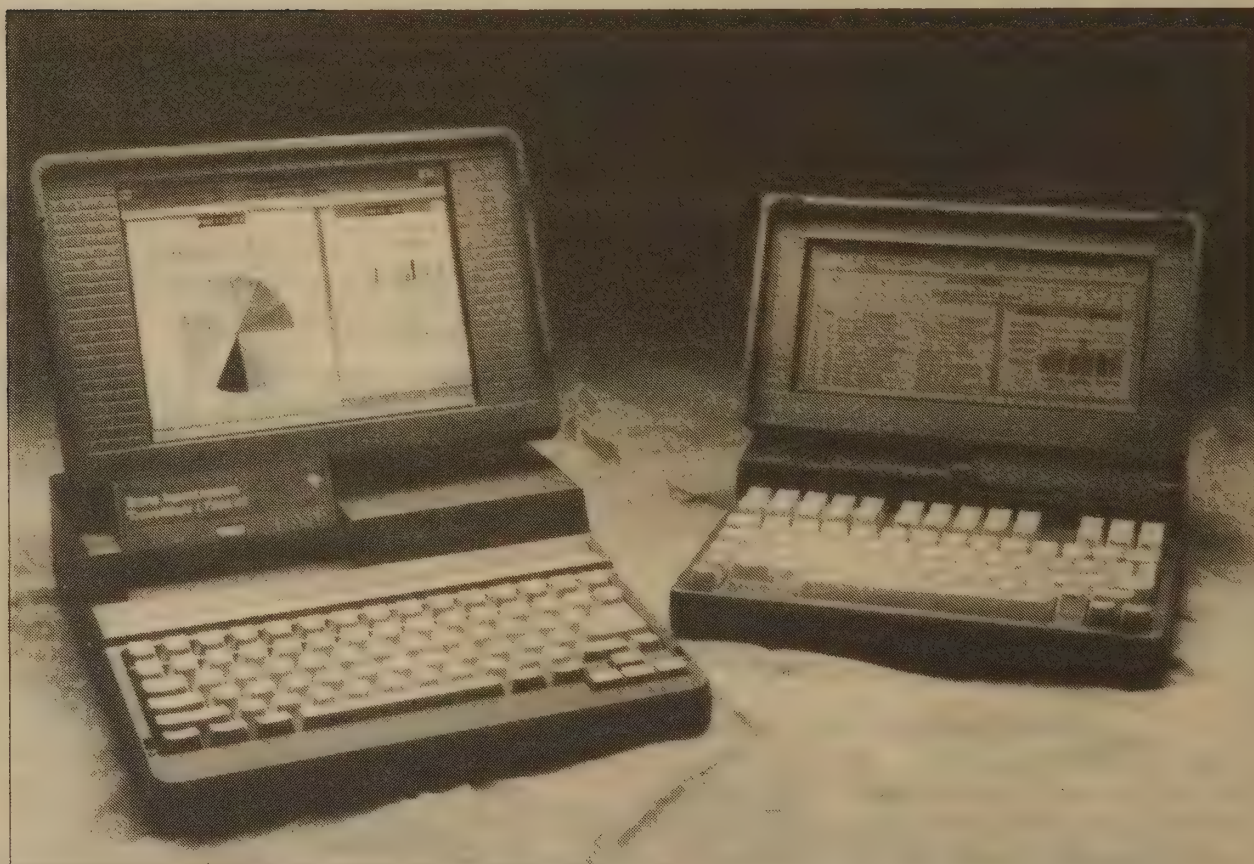
LapLink is a wonderful transfer utility and will clone itself onto another machine, so there is no need to carry a disk with the program. I prefer to make my transfers through the parallel port, which the ROM-based LapLink will not do, so I attached the 1.44Mb floppy drive and installed my own copy of LapLink. Transfers through the parallel port are considerably faster, but you can clone the software only through the serial port.

The keyboard has full-size keys and a good feel. The layout is a bit strange, again in order to accommodate the small size and weight. Although the keyboard is far from standard, I like the feel of it so much that I won't bother to complain about its limitations. There are twelve function keys, cursor control keys and a full complement of Page Up, Page Down, Home and End keys, none of which require the use of the Fn key, which you need use only to invoke the embedded numeric keypad and a few special functions.

The display is a backlit LCD, featuring blue letters on a silver background. Unfortunately the video output is only in CGA on this model; the more powerful TI laptops all have VGA. In any case, it is easy to connect to a color monitor through the nine-pin port on the left side.

Getting the external monitor to work was a challenge. One of the keys is supposed to double as a toggle between the LCD and the external monitor. It turns out, however, that TI has included a bunch of supplemental utilities, including an "altvid" program that switches between the screens. The basic instructions, however, tell you to press the Fn key at the same time as you hit the LCD/Monitor key. Doing so does nothing.

TI has carefully thought through the design of this machine. You can buy a separate numeric keypad (\$199) which also includes a parallel port. Both the numeric keypad and



Texas Instruments enters the laptop market with lightweight 286-based models—the VGA Model 25 and 45 (left) and Model 12

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MS DOS 58
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Regular AT Case 52
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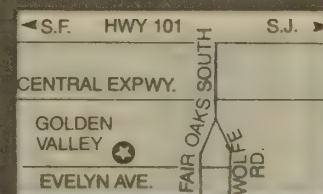
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BUSINESS SOLUTIONS

the disk drive slide into a slot on the right side of the computer. If you need both a numeric keypad and a floppy drive, you can attach the floppy drive to the numeric keypad by a cable.

TI has designed this unit for small weight and size. All the accessories are pared to the bone. Although the basic unit comes with a parallel port, installation of the modem requires its removal. This is why both the numeric keypad and the floppy drive come with parallel ports. When you buy the modem, it comes with an attachment for the right side of the computer that provides a parallel port, so you don't have to buy accessories you don't want in order to get your printer port back.

The 2400 baud modem (\$449) comes with just one telephone jack. Although the modem has a speaker, you must buy a line splitter and then plug the modem line in one side and the telephone into the other side if you use both the phone and modem at the same time. This is not an entirely bad arrangement, just a little out of the ordinary with most

modems having two jacks—one to connect a cable to the phone jack in the wall and the other for the telephone itself.

The TravelMate includes a nickel-cadmium battery that will operate for about three hours of normal use. It is automatically recharged when you use the (included) AC power source. Another option is an express battery charger (\$199) which gives a quick charge. Like the rest of the machine, the battery arrangement is well thought-out. TI has provided for changing batteries—extra battery packs go for \$129—without powering down. Inside the battery compartment, there are two plugs for batteries—you simply plug in the new battery before you remove the old one.

The basic unit is also designed with a great deal of thought given to power conservation. These features are becoming standard on the better portables. I would not buy any portable these days that does not have sophisticated power conservation features.

This unit works extremely well and is definitely worth checking out. ■

RESOURCES:

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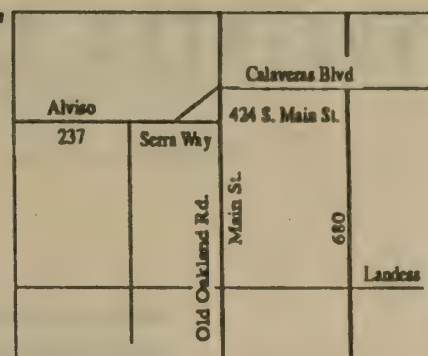
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NEW TRENDS IN LAPTOPS

Laptops have definitely moved out from a niche market into the big time. Vendors who previously stayed away from the little machines are now jumping in.

I see mail order catalogs filled with new notebook and laptop machines that promise everything, and these new machines by smaller vendors are beating the pants off of the bigger vendors, at least when it comes to price. I think the technology is sufficiently developed at this point that there is no reason to stay away from the smaller vendors if they have the machine you want.

Unique designs are appearing on the market. GRiD has just announced a new machine with a built-in pointing device called an Isopoint, which will allow you to point without having to use a mouse—you do not need to have a flat surface. This makes especially good sense for portable units that are frequently operated far from a desktop. But the real motivation for this kind of product is the expected success of Windows 3.0, which GRiD includes with the machine. Nobody knows for sure which device will prevail, but I suspect that something other than a conventional mouse will win out, especially for the laptop market.

Ergo Computing has put out a computer designed for the user who wants to take his or her machine back and forth between a number of locations. The Brick, as they call it, is a computer with neither keyboard nor monitor, the idea being that you will have a keyboard and monitor at multiple locations and just carry the computer itself back and forth. This is especially appealing for those of us who

really don't use the computer in the field, but want portability between locations.

This idea enables Ergo to concentrate on making a powerful computer without bothering with the weight and space of batteries, screens and keyboards. This is one of the most interesting designs I've come across. These people apparently plan to introduce docking stations and a number of other accessories in the near future.

Other unique designs offer built in CD-ROM drives and feature removable hard disks. This latter design—also by GRiD—has lots of potential. If a company is using only portables with removable hard disks, the user can travel with nothing more than the disk and plug in when she arrives at the next location. Also, this approach provides a good deal of security, as people can lock up the hard disk. Finally, it may allow a smaller number of actual computers to get the job done, as a company can have a hard disk for every user, but only a limited number of computers.

The press has recently been filled with reports of high-pitched tones coming from CRTs. Apparently monitors create a sound beyond the hearing range of most people, but it's a definite annoyance to those few who can actually hear it—mostly women. As we move into high definition monitors, the technology will eliminate this problem. For now, however, portables offer one simple solution as they do not use a conventional display.

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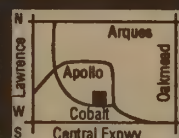
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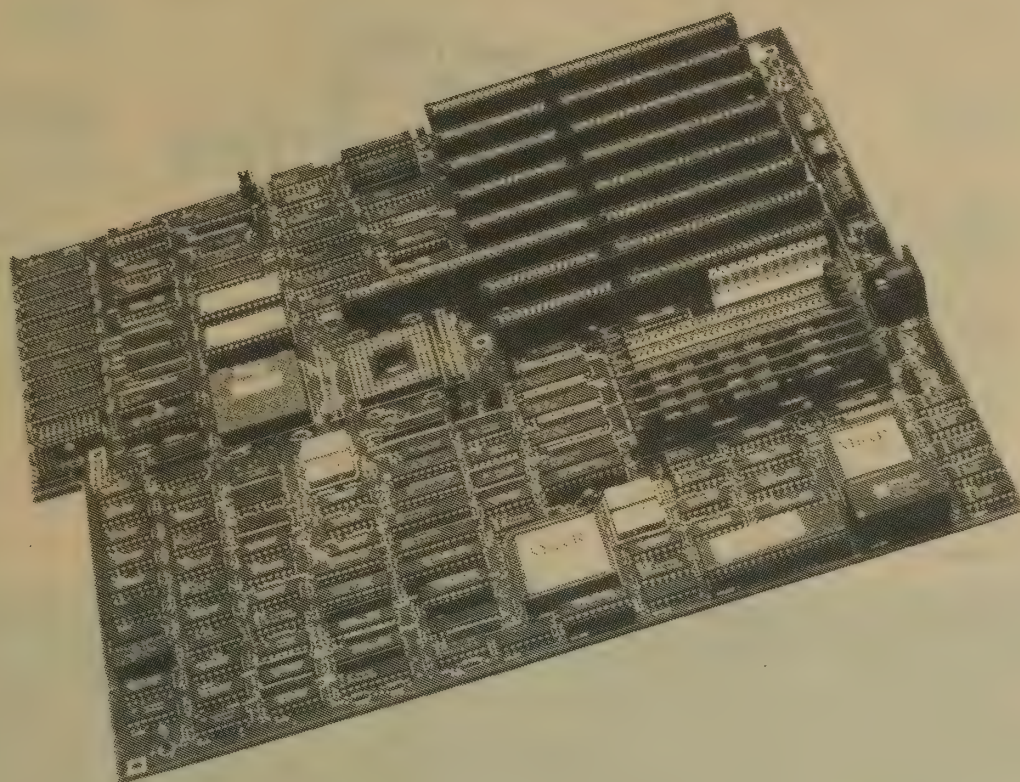
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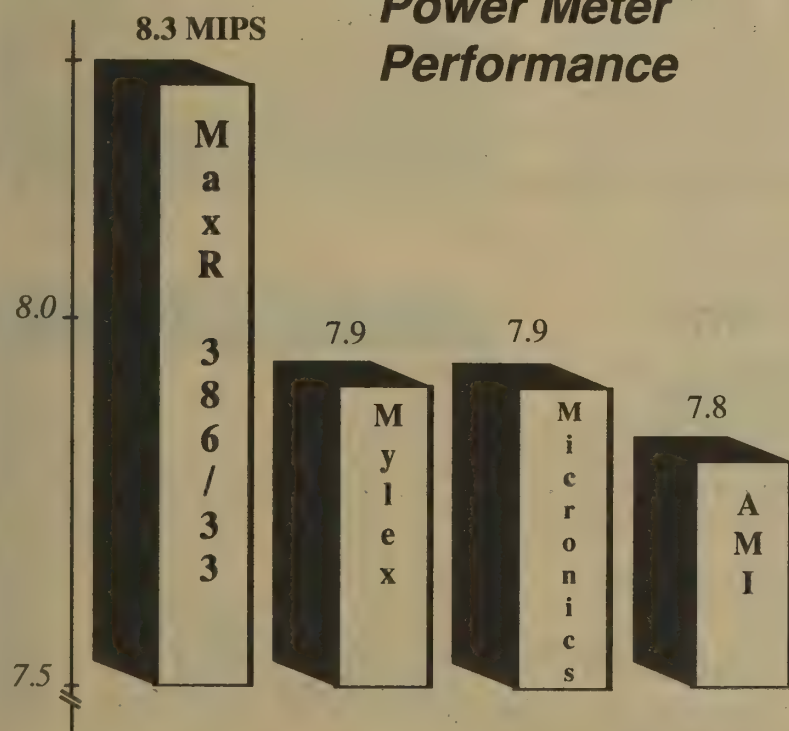
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286-20 MHz 0 Wait

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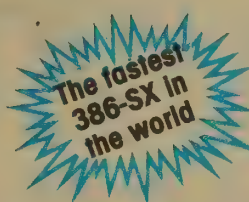
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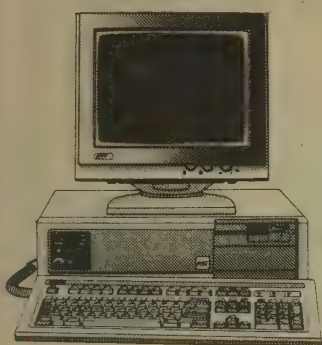
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286-12 MHz 0 Wait

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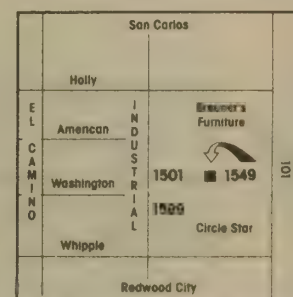
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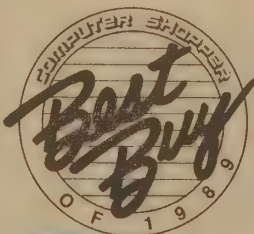
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WINDOWS v.3

Basic Facts And Fictions

BY LENNY
BAILES

Microsoft Windows, version 3, has been with us for several months now, and has rapidly become a box-office phenomenon. The PC-using community, like the movie-going public, is hungry for new ideas: fun, entertainment and productivity. The tag on the back of the Windows box certainly promises some of this: "Use all of your applications within an exciting visual environment. Get the most out of your system: Windows applications now have direct access to *all* the memory in your 286 or 386. And (if you have a 386 machine), Windows 3 becomes a multitasker for your everyday DOS applications."

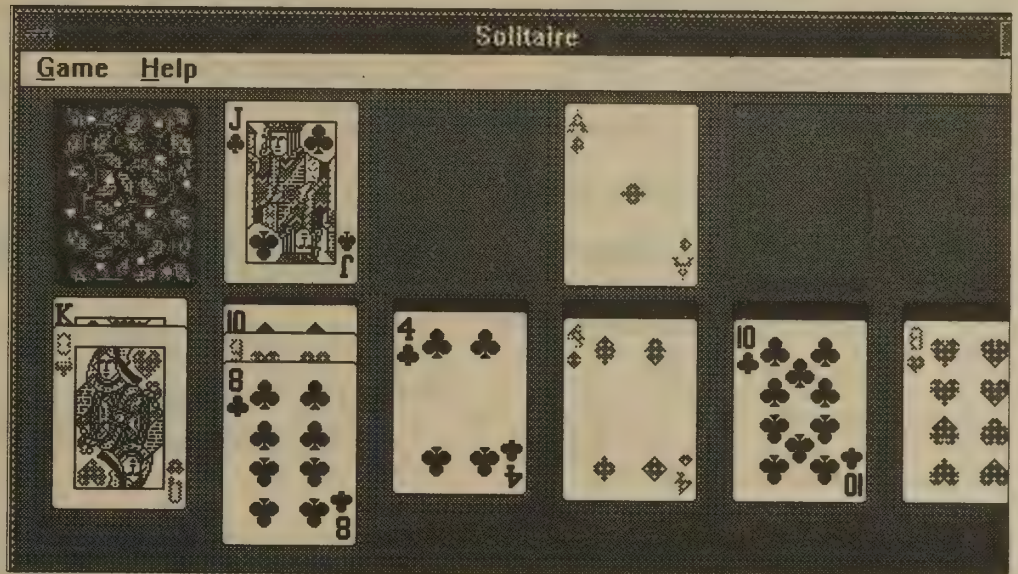
As Pete Bergman of the Firesign Theater used to say, "Friends, this is not like those self-sharpening Austrian razors..." This version won't crash on you like Windows 386, v 2.11.

To give credit where it's due, applications developers for Windows 3 can take advantage of some really good concepts. Dynamic Data Exchange and Dynamically Linked Libraries are new Windows features which allow applications to update each other's data files. Word for Windows, Microsoft Excel, Xerox Formbase, Wingz PC and other innovative programs exploit the best that Windows has to offer. Change a spreadsheet in Excel, the numbers in a related Formbase chart can automatically correspond. A table linked in WinWord for a report will adjust itself without manual re-editing. This is the beginning of a long-sought information exchange between applications.

Various claims have been made about the new version of Windows: it will multitask all your applications; it's much faster and easier than previous versions; it will put the Macintosh out of business; it provides unlimited memory for applications, etc. In this and later articles we'll evaluate some of these claims.

FIRST LOOK

There's no doubt that Windows 3 is cosmetically superior to older versions. The interface is easier to look at. File managing capabilities have been improved, and the individual applications included with the package have all been upgraded.



It's quite impressive to run Windows for the first time and be told that 3000K to 10,000K of RAM is available for programs. Apparently, all of the extended memory on a 286 or 386 system is being accessed painlessly, without additional hardware or software drivers.

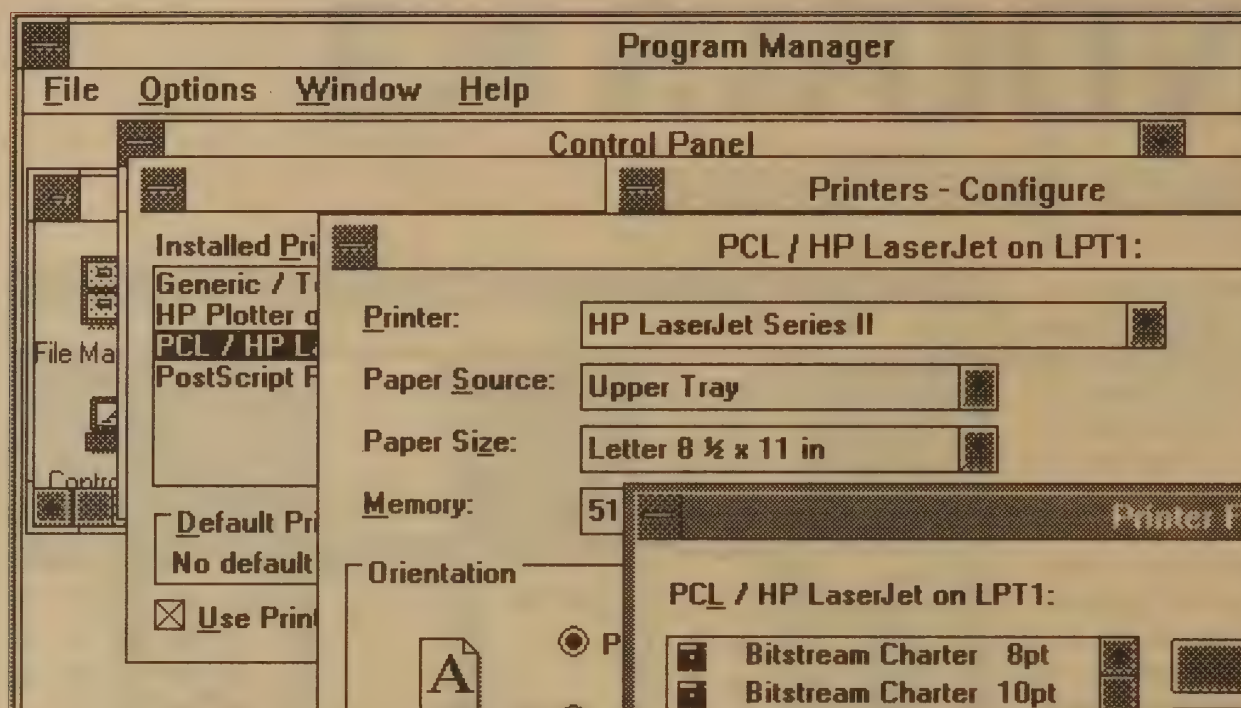
Upon closer examination, though, we see that this amazing claim is really more of a promise for the future. In everyday use, existing Windows applications still swap data to your hard disk when the traditional 640K limitation is exceeded. If application developers do their homework, we may eventually see some programs which really use all of that RAM. As for DOS applications, Windows only multitasks them on a 386 platform. Windows' virtual memory tricks are not very different in kind from the technology used by other multitaskers like DESQview.

For desktop publishers, there is one real improvement. Windows 3-compatible applications overcome file size limitations for graphic images. This is true on both 286 and 386 machines. If you have been frustrated by "out of memory" messages in PageMaker or Corel DRAW!, you will want to upgrade to the Windows 3 versions as soon as possible. If you provide the memory, you will be able to load large TIFF and EPS files with impunity.

GUI, GUI...

When Windows 3 made its debut, there was

Windows 3 includes a new solitaire game, to complement the traditional "Reversi".



Windows 3 will recognize third party fonts and build a printer driver.

talk in the press (based partly on Microsoft PR material) that Macintoshes were now obsolete. The Mac's streamlined graphic interface had finally been cloned and adopted in the MS-DOS world, where processing power was available for one-third to one-half the price.

Mac users looking at Windows 3 may well be skeptical. "Yes," they might admit, "this does look prettier than previous versions of Windows. But what is all this stuff on the screen? How do you use it? I see five or six windows, and you tell me some of them have different rules. You say there are 'program windows', and 'file windows'. And these 'minimized' icons on the screen—they all do something different when you select them?"

"Well, yes," says the MS-DOS user. "There are 'Program icons', 'Group icons', 'Active Application icons', and 'Directory icons'. But it's easy to understand once you read the manual. You have complete control over everything."

"Sounds like MS-DOS," says the Mac user. "Isn't it a little—I don't know—cluttered?"

Windows 3 does show your programs as icons in a window. Yes, you can start a program by clicking on it with the mouse. But, no, Windows doesn't group programs and related file icons in folders corresponding to DOS's real directory structure. Windows cheats on this point by dividing itself into two. The Windows Program Manager is a menuing system. The Windows File Manager is a directory tree with immovable file icons.

In the Program Manager you can reposi-

tion icons to your heart's content. You're really manipulating menu selections, not moving files around. As with text-based front ends like Magee's Automenu, you choose the programs you run frequently and give Windows the real directory path information for each. These choices show up as icons inside of "Program Group Windows."

You don't normally make your directory of related data files into menu choices. You could spend a lot of time at this, if you wanted to pretend that Program Group Windows are really Mac folders—but they aren't.

Windows lets you access real directories with its other half, the File Manager. The File Manager appears on the screen as a directory tree, like Xtree or The Norton Commander. Clicking on a directory opens a subsidiary window with a neatly arranged list of files. You do file maintenance by clicking on a filename with the mouse and dragging it over to the Tree window or to another directory window. Applications can be started by hunting them up and double clicking on their names in the directory window. You can also click on a pre-configured data file.

There are little graphic folder and file icons placed next to each text entry in the File Manager, but only for show. You can't move or manipulate them. The main difference between the File Manager and the MS-DOS Executive of Windows 2 is the ability to open and size directory windows. You can drag files back and forth with the mouse and select multiple files to copy or delete.

The File Manager is one part of your bifurcated screen. It coexists and competes for

space with the Program Manager and with any actual Windows applications you have running. You might deduce from this that it's desirable to run Windows at SuperVGA resolutions—800x600 or 1024x768. The default Windows package generally limits the display to 640x480 resolution with VGA. Individual graphics card vendors supply higher resolution drivers.

Because of the way Windows is designed, it is possible to substitute third party "Program" and "File" managers for the ones supplied by Microsoft. Some programmers are hard at work now on file managers to make Windows more Mac-like. We'll look at some of these in a subsequent article.

WHO CAN USE IT?

The box says "Personal computers using Intel 286, 386SX, 386DX or higher processor. 640K conventional memory (256K recommended). A hard disk and one high-density floppy (1.2/1.44Mb), CGA, EGA, VGA, 8514/A or Hercules graphics adaptor, MS or PC DOS v3.1 or higher." Microsoft compatible mouse and Hayes compatible modem are recommended options.

On the low end of the scale, you could run Windows 3 on an XT (8088) with CGA, small hard disk and 360K drive, but it wouldn't be much fun, which is why Microsoft doesn't recommend it. Windows has three different modes of operation. Only "Real" mode will work on an 8088, and this is essentially like running Windows 2. If you've been running Windows applications on an 8088 with runtime modules or with version 2, there's no point in an upgrade. Text-based file managers and multitaskers provide much more productivity in this environment. 8088 users who want to experiment with graphic interfaces would do well to hunt up a copy of Digital Research's GEM.

The second mode of operation for Windows is called "Standard." This is the way Windows is designed to work on 80286 machines with at least 256K of extended memory. Windows in "Standard Mode" will automatically recognize all extended memory in your system, and make use of it for specially written Windows 3 applications. Older Windows applications may not operate in Standard Mode; they must be run in the 8088-like "real mode". When Windows 3 detects you launching an old Windows application, it gives you a warning note about this. You can go ahead and try to run the application in Standard Mode, but it may crash. Most pro-

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In everyday use, existing Windows applications still swap data to your hard disk when the traditional 640K limitation is exceeded. We may eventually see some programs which really use all of that RAM. As for DOS applications, Windows only multitasks them on a 386 platform.

grams written for Windows 2 will crash if you try this, but there are some well-behaved exceptions. Applications written for Windows 3 take advantage of your extended memory as data storage area. Expanded memory managers are no longer necessary.

On a 286, in Standard Mode, Windows will function as a task switcher for ordinary MS-DOS applications. It will not provide them with expanded memory unless you pre-load a third-party EMS manager. You can launch a

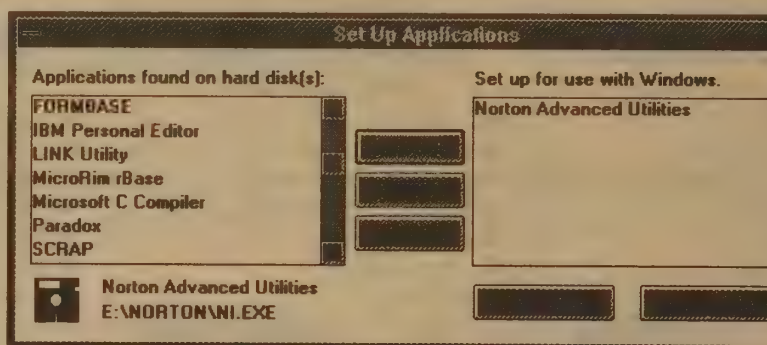
DOS program like WordPerfect in a full-screen, text-based window. This suspends all other processes. You can cut text to the Windows clipboard and freeze WordPerfect. Then, you can switch back to Windows to retrieve the text to a Windows application. You can launch as many full-screen DOS applications as you have memory and disk swap space for, but only one will run at a time.

Sophisticated veterans of Windows 286 may detect a small loss in functionality here. In Windows 2.11 it was possible to take a well-behaved DOS application like Procomm or WordStar, and actually run it in a small window, alongside applications like PageMaker. With Windows 3, this is only possible on 386-based machines.

If you have DOS applications like Paradox or dBASE which require EMS 4.0 memory, you can install a third-party EMS manager on a 286. If you do this, you may get erratic behavior from your Windows applications. I've found that Windows 3 applications get along with third-party EMS managers in "real" mode most of the time, but may crash when you try to load large data files through the clipboard or in an application. On a 286, Windows will coexist with some EMS manag-

ers in Standard mode, if you leave some memory configured as "Extended."

In "386 mode" Windows combines all of the Standard Mode features with the capacity to allocate EMS 4.0 for DOS applications, running them concurrently with Windows applications. On a 386 many DOS applications can be run in small windows. Success at this hinges mostly on how the DOS programs handle their graphics display. A general rule of thumb is that Windows may not run a DOS application which uses a higher graphics resolution than Windows itself is configured



Windows will automatically install applications which it can recognize.

for. As with previous versions, Windows 3 can be told the specifics of DOS applications by configuring special Program Information Files (PIFs). You can get around some of the graphics limitations by playing with the PIF choices. One improvement in Windows 3 is the presence of a default PIF value which allows you to automatically launch some DOS programs without fussing over the settings.

Windows 3's setup program will also search your hard disks looking for applications it can recognize. As with DESQview, it gives you the option of automatically installing these DOS programs with pre-defined PIF values.

Although the box tells you that Windows can be run with CGA and Hercules graphics, prospective buyers should be advised that the cosmetic appearance of the interface suffers with these displays. And while Windows will go into Standard Mode with only 256K of extended memory present, a minimum of 1-2Mb should be installed to take advantage of the improved capability to handle graphics files.

If you're serious about running more than one Windows or DOS application concurrently, I would recommend at least 4Mb of extended memory. I watched a demonstration of the new Ventura Publisher for Windows on a 386SX with only 2Mb installed. Every time I clicked on a new menu option, I had to wait for forty-five to sixty seconds

while some intensive disk reads took place. 4Mb may seem like a lot, but it will help you to avoid watching your hard disk light blink whenever you click with the mouse.

HARD DISK COMPATIBILITY

One last caveat with Windows 3 involves its interaction with the hard disk(s) in your system. Windows was developed to work optimally with hard disks no larger than 80Mb, partitioned with DOS 4.01's standard FDISK. Many users of DOS 3.xx have gotten around this limitation with third-party software like

On-Track's Disk Manager, or Speedstor. Under certain conditions, Windows 3 can respond adversely on hard drives partitioned with non-standard software, trashing your disk and necessitating a complete reformat.

This last event is rare, although it did happen to me. According to Microsoft technical support, it doesn't have to happen to you. Hard disk problems with Windows 3 can be avoided if you take the following precautions:

- Do not use the Smartdrv.Sys disk cache on any disk with more than 1024 cylinders, or on any system which is set up with third-party software. Microsoft is planning an upgrade to Smartdrive which corrects some bugs discovered in the current version.

- If you are using third-party software like On-Track's Disk Manager, or Speedstor, and you wish to run Windows in its 386 Enhanced Mode, make the following changes:

1. Make sure that Windows is *not* configured to run a permanent swapfile. (This feature is included to speed up disk read operations on 386 systems.) You can check on this by starting Windows in Real Mode. Select "Run" from the Program Manager "File" menu. Type in the word "Swapfile." If Windows tells you that a permanent swapfile has been set up, disable it.

2. Use an ASCII text editor, or Microsoft's SYSEDIT.EXE to make a change in the file

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called SYSTEM.INI, found in the Windows subdirectory on your hard disk:

Under the section headed

[386enh]

add the following line:

Virtualhdirq=False

These changes should allow Windows to coexist with hard drives larger than 80Mb partitioned in nonstandard ways. They solved the problems I experienced with a Maxtor 160Mb drive and Speedstor.

BIG IMPROVEMENTS

Windows 3 has greatly automated its font and printer installation procedure. If you have third-party PostScript or LaserJet II soft fonts, Windows will build a driver that allows you to use them from any Windows application. There is also a driver for the LaserJet III's scalable fonts available on request from Microsoft.

Windows Paintbrush will now handle bitmaps in 16 to 256 colors. Artwork can be saved or loaded from the .PCX format, which is a PC standard. (To edit an image in 256 colors, you must have an IBM 8514/a graphics adapter, or obtain special drivers for your S-VGA card.)

The Windows clipboard now also functions as a crude scrapbook, allowing you to save pasted images to disk files for later retrieval.

Windows now includes a macro recorder. You can preserve a sequence of keystrokes or mouse movements and play it back in any Windows application.

SOFTWARE COMPATIBILITY

A list of addresses and telephone numbers for manufacturers of Windows software is included in the package. The list includes an optimistic estimate of when each company is expected to ship a Windows 3-compatible application.

Adobe is expected to have a compatible

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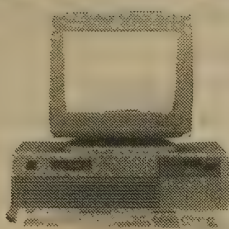
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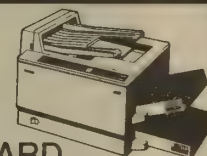
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Although the box tells you that Windows can be run with CGA and Hercules graphics, prospective buyers should be advised that the cosmetic appearance of the interface suffers with these displays.

version of Illustrator in the spring of 1991. It will contain most of the features of the impending release for the Macintosh. Unfortunately, the current PC version of Illustrator is totally incompatible with Windows 3. It won't run in any mode. Streamline v1.1 can be run in Real Mode only.

Aldus PageMaker 3.0 will operate in Real Mode only. An upgrade is available for \$25, to allow PageMaker to run in Standard Mode. This is a maintenance upgrade only. Version 4 of PageMaker, paralleling the new Macintosh version, is expected toward the beginning of next year.

Corel DRAW!, v1.1d will run in Real Mode. It also runs in Standard Mode on some systems, but remember, you're on your own if you try this. Corel DRAW!, v1.2 is compatible with Standard Mode, but there are problems reported on some systems with the WFNBOSS, font manager. You'll be safe if you run the font manager in Real Mode only.

Xerox is now shipping a Windows 3-compatible version of Ventura Publisher. It is basically a port of the GEM VP Professional,

with no major feature upgrades. Formbase v1.0 will run in real mode. Formbase v 1.1 is fully compatible and currently shipping.

Micrografx Designer v2 works in real mode. Version 3 is compatible with Standard Mode.

Microsoft itself has issued a new version of Excel. Upgrades are free to registered owners of previous versions. Only the latest version of Excel will run in Windows 3. Word for Windows v1.0 works in Standard Mode, but some users have reported problems with printing PostScript files and accessing screen fonts. Version 1.1 is now shipping, and upgrades are \$7.50 to registered users.

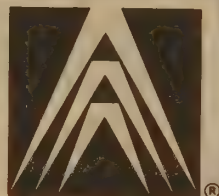
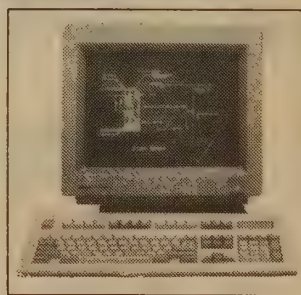
SUMMARY

Despite the bugs and limitations discussed in this installment, Windows holds open a promise for the future of MS-DOS computing which should not be underestimated.

In an upcoming article, we'll look at the heart of the matter, new third-party Windows applications and what they can do for your productivity. ■

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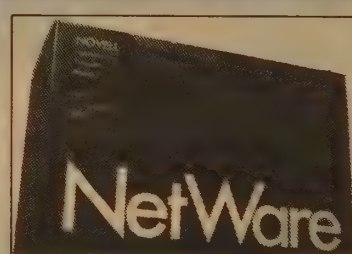
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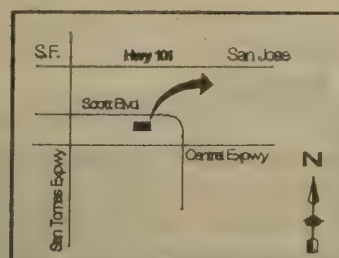
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STANDALONE 9600 MODEM FROM PRACTICAL PERIPHERALS

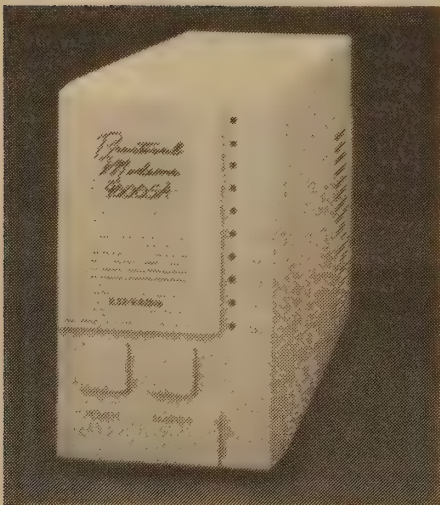
Practical Peripherals, based in Westlake, CA, has priced its new PM 9600 SA modem at only \$699 retail. The PM 9600

SA features the latest error control technologies and supports both v.32 and v.42bis and MNP 5 error correction protocols for maximum flexibility in high performance applications. This includes automatic correct connection mode with remote, data compression of v.42bis and MNP 5, and data rates of 75 to 38,400 bps. It is compatible with all current domestic and most international modem types, including Hayes Ultra Smartmodem 9600 and Smartcom III. All Practical Peripherals modems come with a five-year warranty. Practical Periph-

erals, Inc., 15760 Ventura Blvd., Suite 1020, Encino, CA 91436. (818)990-1235.

INTEL PCEO PLUG & PLAY 9600BPS MODEM

Intel Corporation's Personal Computer Enhancement Operation (PCEO) continues to set new price/performance standards. The 9600EX offers error-free throughput of up to 3804K bps, conforms to international modem standards and plug and play installation. This is an external, full-duplex modem for systems with asynchronous



PRODUCT UPDATES

- **DEST, Inc.** has released the first upgrade of its optical character recognition (OCR) software, **Recognize! for the PC v.2.0**. Recognize! for the PC can now be used with scanners from other manufacturers, in addition to new features and increased speed. The upgrade for current users is \$95. DEST, Inc., 1015 E. Brokaw Rd., San Jose, CA 95131. (408)436-2700.
- **Fremont Communications Co.** has rewritten the software shipped with its Frecom Fax95 board for the IBM PC and compatibles. The software, **Release 2.0**, is being shipped free to customers. Fremont Communications Co., 46309 Warm Springs Blvd., Fremont, CA 94539. (415)438-5000.
- **Fujitsu America, Inc.** has reduced the price for the **RX7100PS** family of PostScript personal page printers. Price reductions range between \$800 and \$1000, depending on the configuration and model. Fujitsu America, Inc., 3055 Orchard Dr., San Jose, CA 95134. (408)432-1300.
- **International Computer Group, Inc.** is now shipping **Perfect Menu v.2.3**, its menuing system for DOS LANs. International Computer Group, Inc., 18520 Office Park Dr., Gaithersburg, MD 20879. (301)670-7007.
- **OWL International, Inc.** now offers **Guide Reader 3.0**, a documentation display tool that enables organizations to cost-effectively distribute electronic documents. Guide Reader 3.0 is a companion to Guide 3.0, an interactive hypermedia development system. OWL International, Inc., 2800 156th Ave. S.E., Bellevue, WA, 98007. (206)747-3203.
- **Reference Software International, Inc.** is currently sending free upgrades, v.2.0, to owners of its grammar and spell checker **Grammatik Mac**. Reference Software International, Inc., 330 Townsend, Suite 123, San Francisco, CA 94107. (415)451-0222.
- **Silicon Beach Software** has begun shipping **SuperCard v.1.5** free upgrade to registered owners. Version 1.5 expands the power of the original version with such features as hierarchical and pop-up menus, list fields, color text and easier-to-use animation features. Silicon Beach Software, a subsidiary of Aldus Corp., 9770 Carroll Ctr. Rd., Ste. J, San Diego, CA 92126. (619)695-6956.
- **Waterloo Microsystems, Inc.** has released **Waterloo PORT 2.5**, a major upgrade to its LAN operating system. This new version contains new features, including significant enhancements to the user interface, a bundled email package, better performance and improved DOS compatibility. Waterloo Microsystems, Inc., 295 Phillip St., Waterloo, Ontario, Canada, N2L 3W8. (519)884-8590.
- **WordPerfect, Inc.**, in conjunction with Hewlett-Packard Co., has extended **WordPerfect** for Windows to support HP's **New Wave** technology. WordPerfect Corp., 1555 N. Technology Way, Orem, UT 84045. (801)225-5000.

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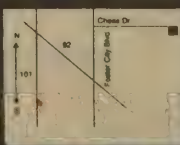
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AT Multi I/O Card	19
Game Card	16
Clock Card	16
Modem 2400 Internal	79

Case/Power Supply

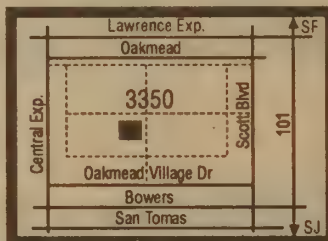
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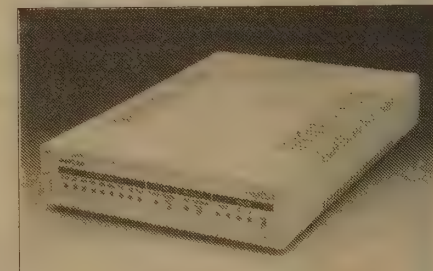
communications support, such as the IBM PC, XT, AT, PS/2 and compatibles. The 9600EX Macintosh option includes a Macintosh serial cable. The modems



can operate as synchronous or asynchronous devices over dial-up or two-wire leased lines, allowing communications with PCs, terminals, minicomputers and mainframes. (\$799 for IBM PCs, \$819 for Macintosh computers. Both versions include free communications software) Intel Corp., Personal Computer Enhancement Operation, CO3-7, 5200 N.E. Flam Young Pkwy., Hillsboro, OR 97124-6497. 1-800-538-3373.

FUJITSU DEXNET 200 FAX MODEM

The dexNET 200, from Fujitsu, is an external, RC232-C compatible fax modem that is plug-compatible with a variety of computer operating systems, including DOS and UNIX. Features on



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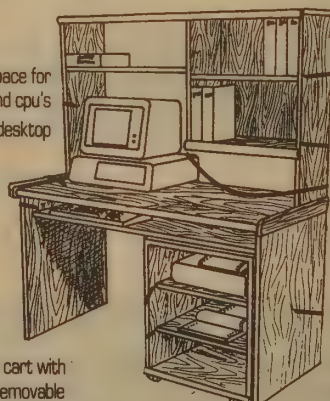
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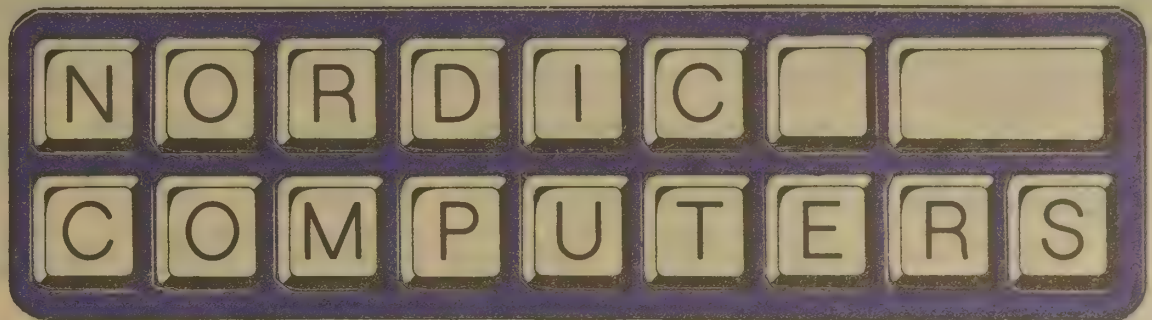
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Socket for 80387

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Clock/Calendar

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Clock/Calendar

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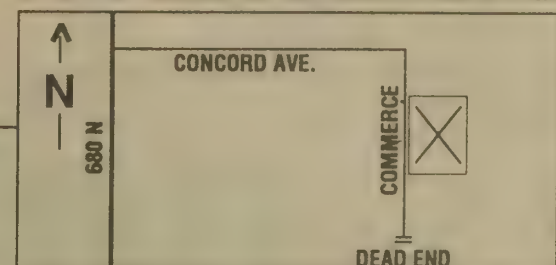
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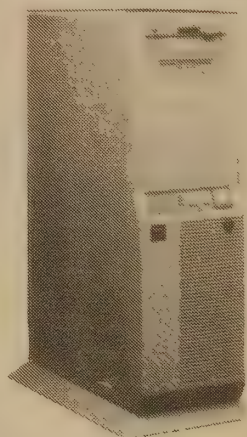
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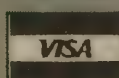
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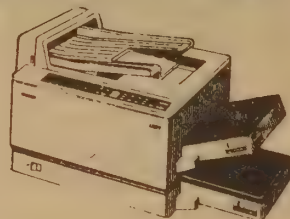


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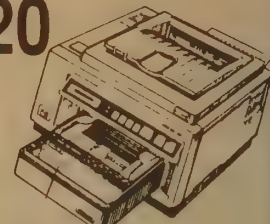
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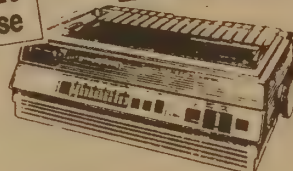
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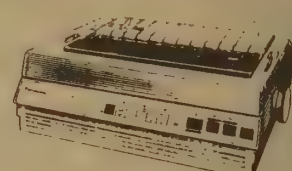


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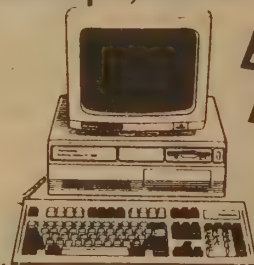


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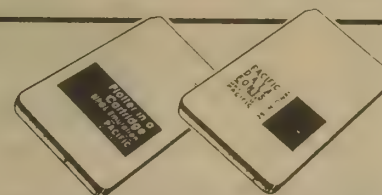
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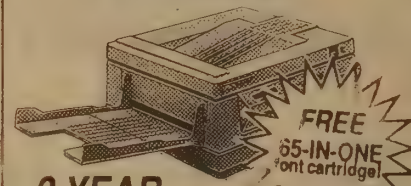
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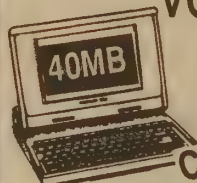
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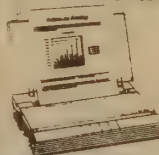
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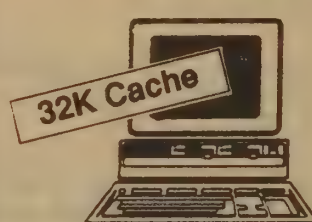


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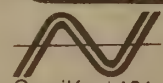
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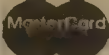
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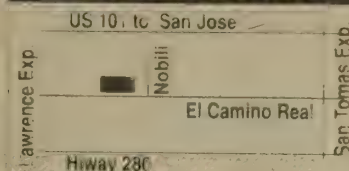
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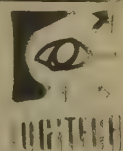
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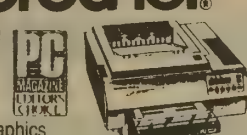
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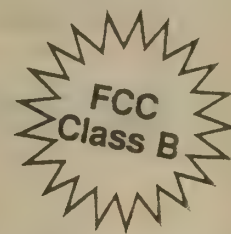
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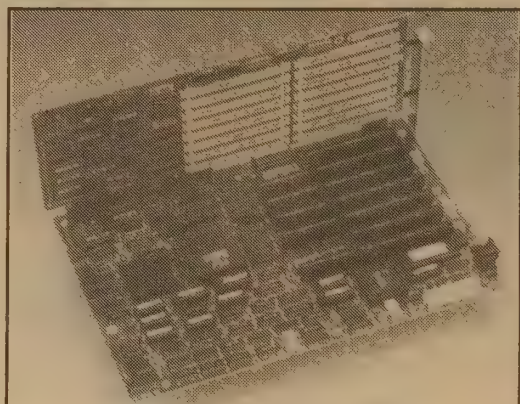
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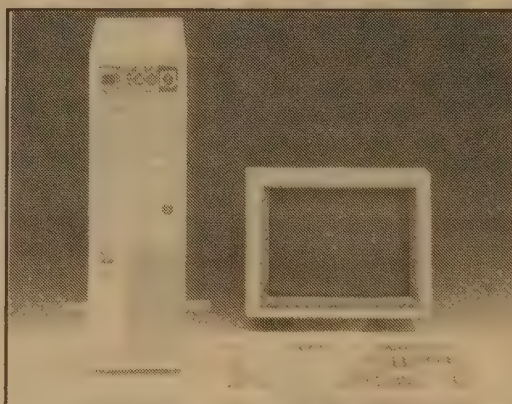
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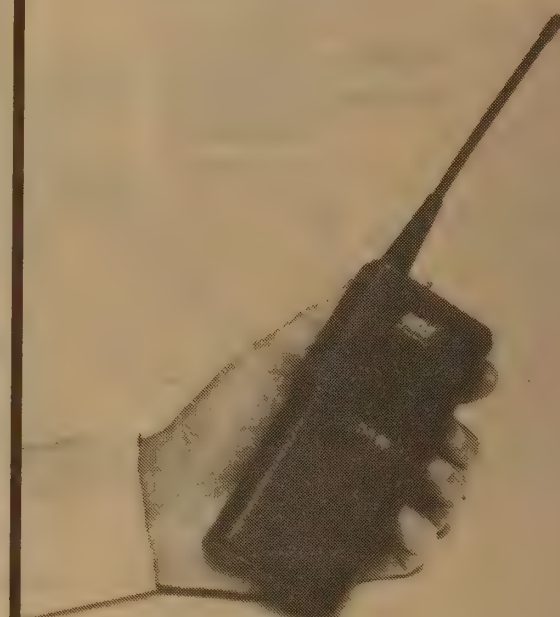
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PRODUCT SPOTLIGHT

continued from page 114



quency, 9600 bps modem, the DR 96. This small asynchronous, synchronous, half-duplex modem offers portable, high-speed wireless data transmission. The size of a walkie-talkie and weighing only 15.5 lbs., the DR 96 includes both the modem and radio in the same compact device. The DR 96 uses a rechargeable 7.5 volt battery pack that can operate the modem from four to ten hours depending on the transmit/receive ratio. It also comes with a separate recharger that has two recharging rates, quick and standard. (\$1295) UDS, Motorola, Inc., 5000 Bradford Dr., Huntsville, AL 35805-1993. (205)430-8000.

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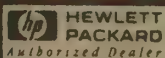
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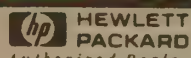
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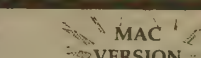
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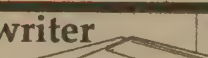
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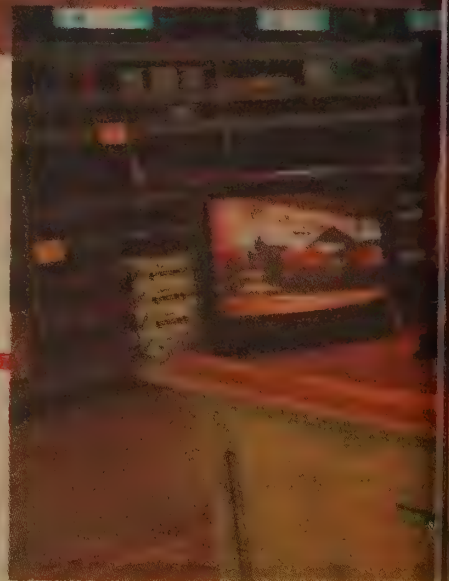
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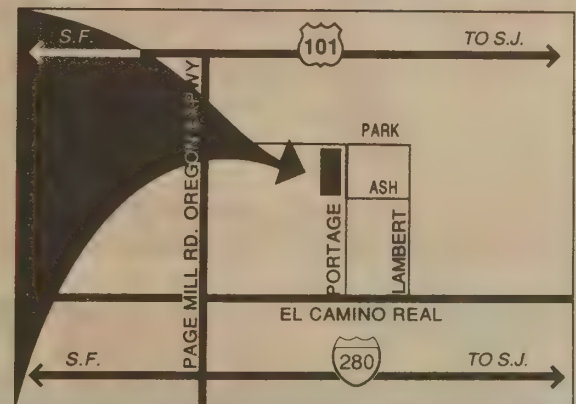
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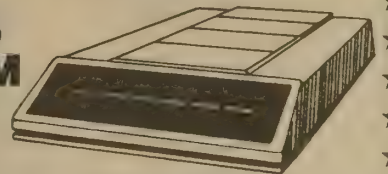
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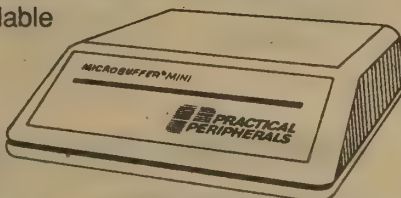
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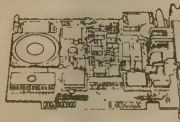
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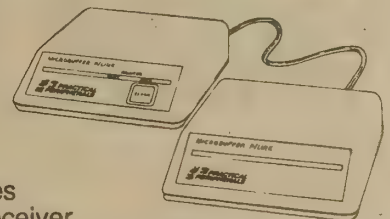


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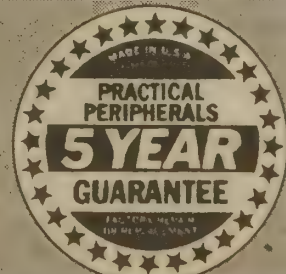
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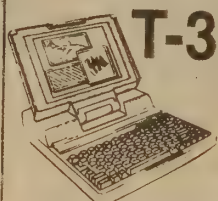
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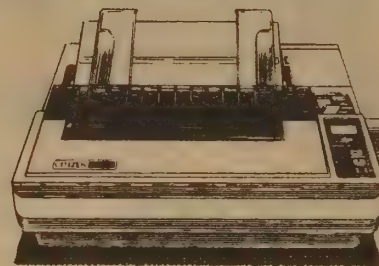
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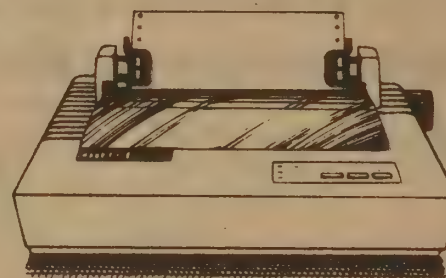
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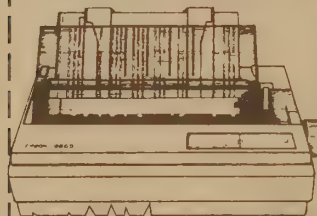
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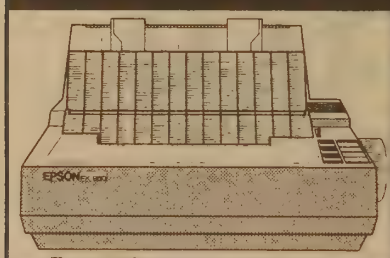
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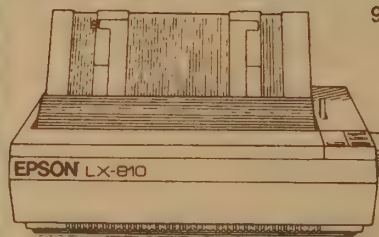


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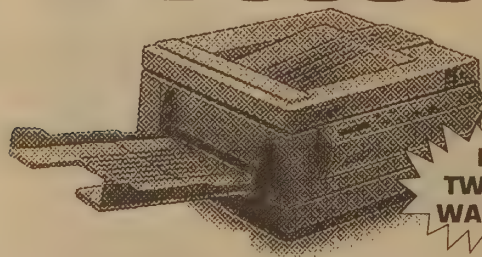
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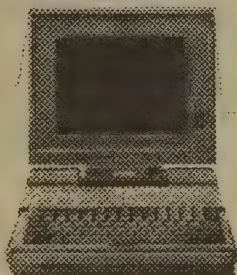
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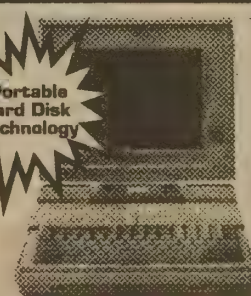
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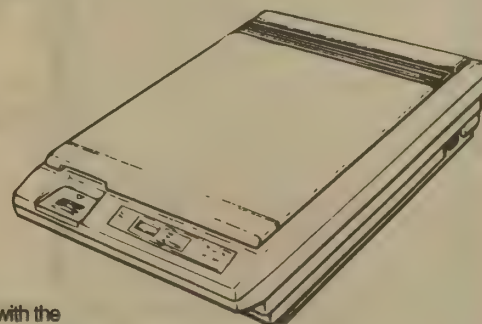
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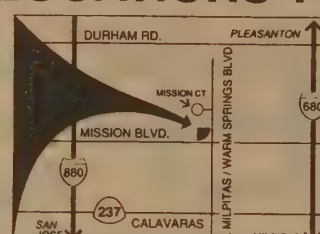
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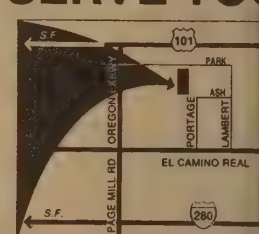
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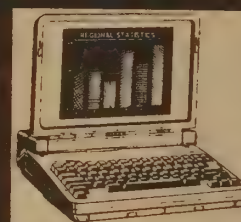
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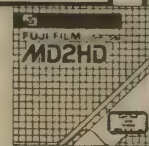
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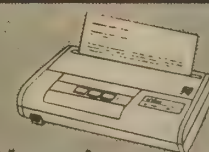


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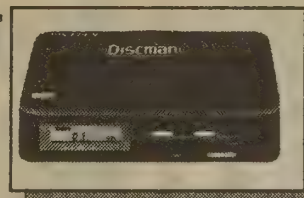
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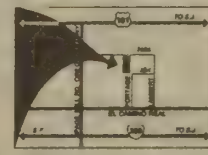
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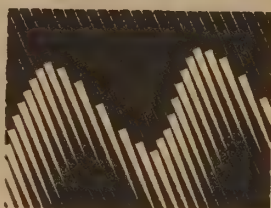
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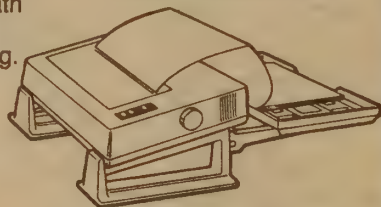
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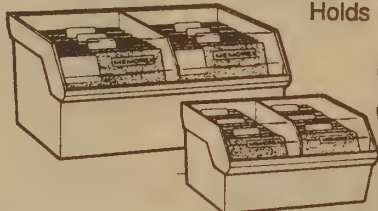
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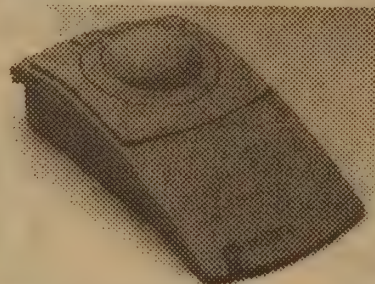
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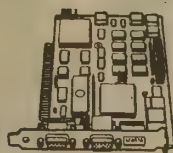


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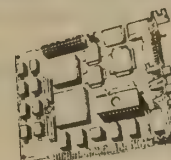


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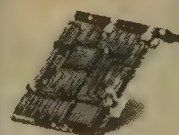
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Lets you combine dialing modes and stations. Electronic hold; insertable pause; wall-mountable.

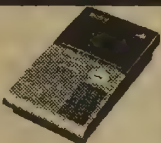
3-step ringer selection: off/low/high.



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MODEL
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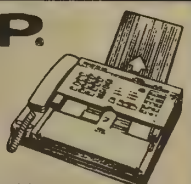
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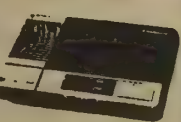


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MODEL
FO-215

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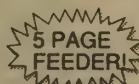


This compact answering machine is perfect for just about anybody. Fully featured, you can retrieve your messages from any tone phone. Plus, with Panasonic's Auto-Logic operation you can hear your messages with a touch of the button. Other features include Auto-Interrupt, 12 function tone remote control, memory playback and call screening.

MODEL
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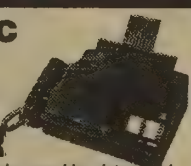


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KXF-50

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10 Page Automatic Document Feeder, Dial Card system Allows 60 Station Auto Dialer. Delayed Send Mode, Half Tone Transmission, G3, Standard and Fine Transmission

MODEL
FO-230

\$598

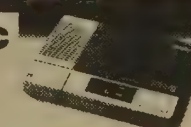
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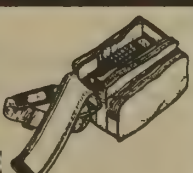


Answering system with Auto-Logic Operation, Tone Remote Control, Digital Display, Message Memo Recording and Remote turn on, Auto-Logic Operation Automatically Rewinds, Plays Messages, Stops at the Last Message and Resets itself at the Touch of One Button.

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MODEL
TV-430

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MODEL WM-A12

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MODEL
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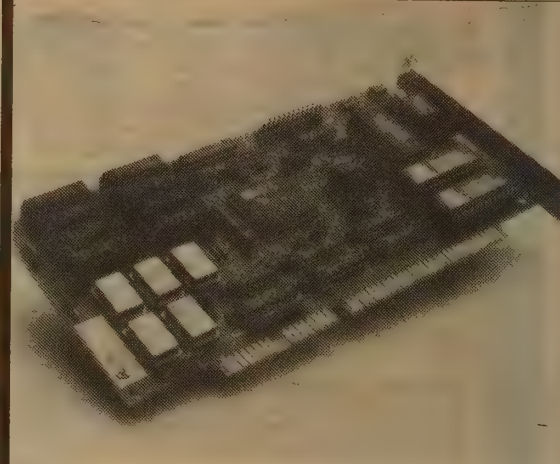
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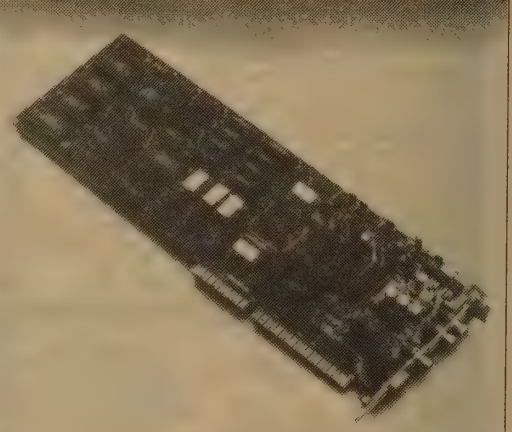
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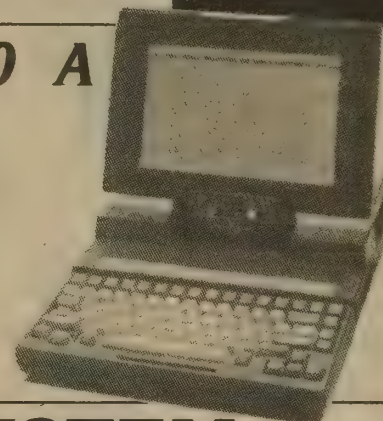
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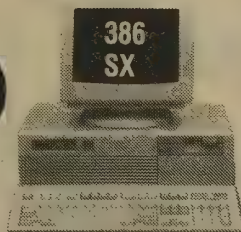


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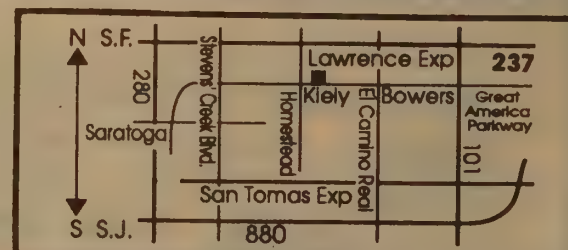
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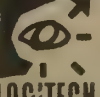
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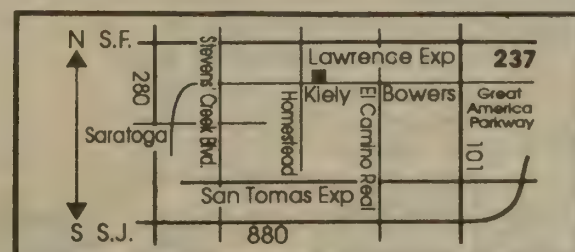


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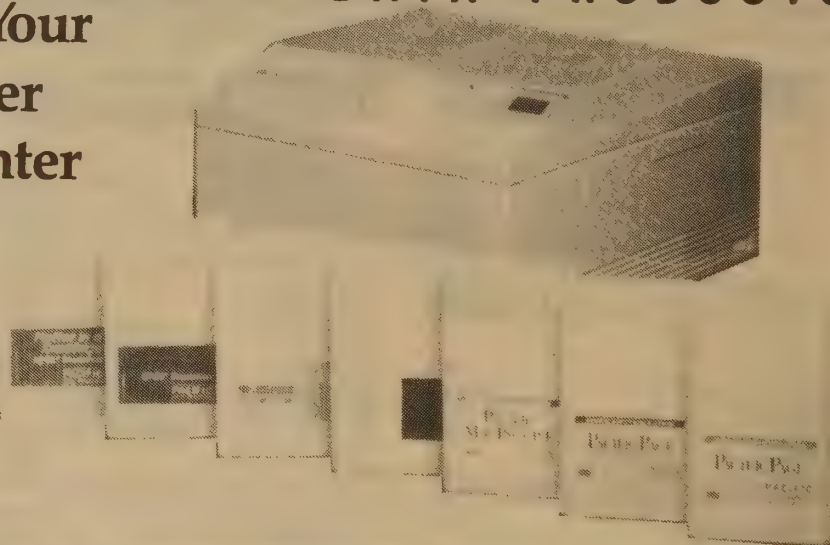
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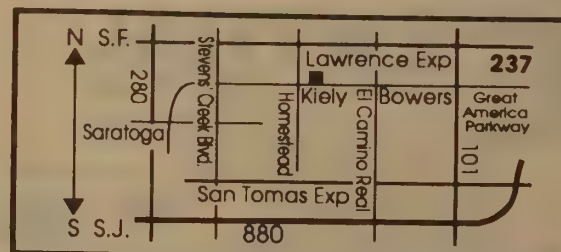
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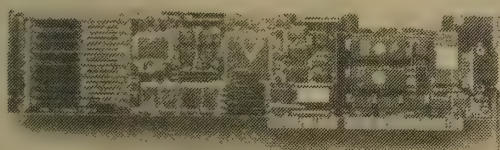


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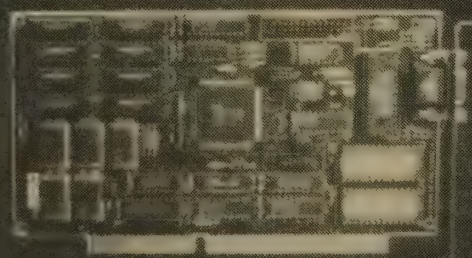
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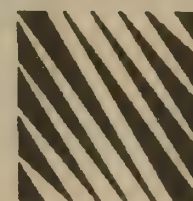
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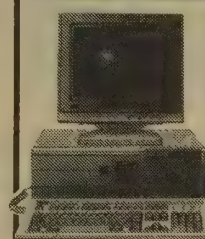
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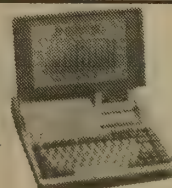
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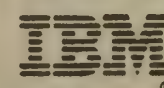


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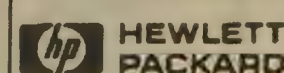
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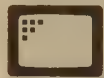
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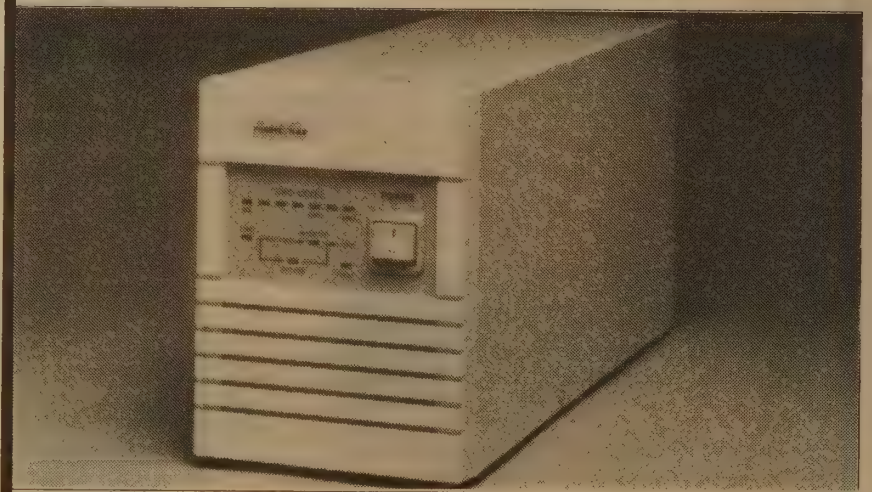
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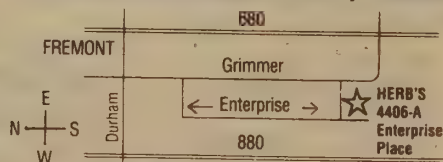
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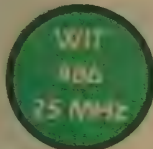
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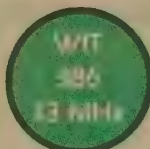
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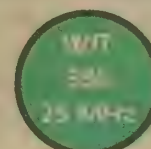
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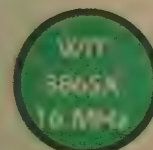
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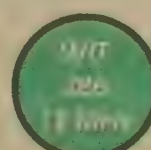
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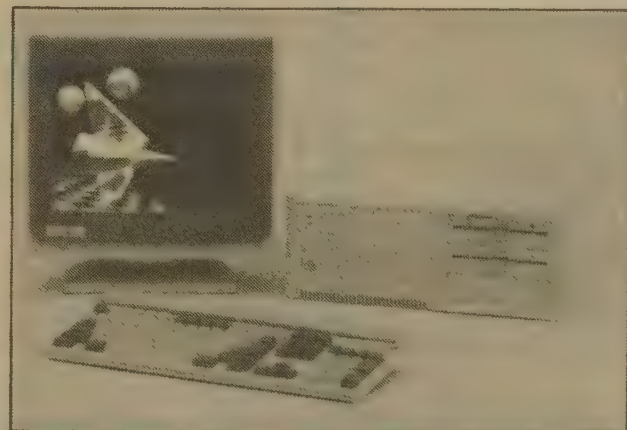
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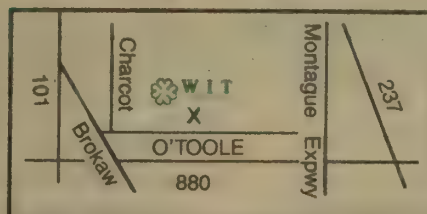
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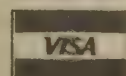
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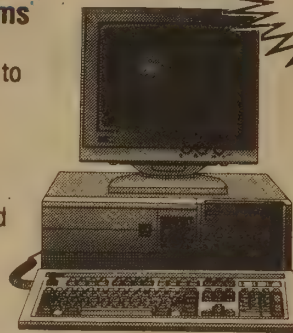
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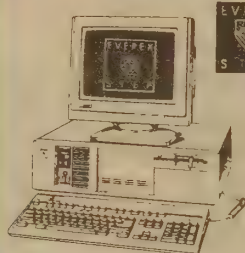
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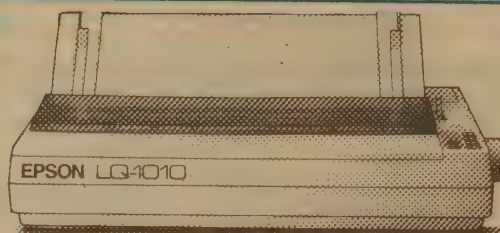
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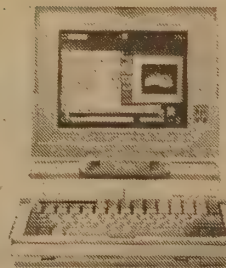


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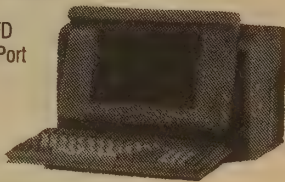
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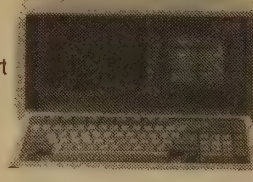
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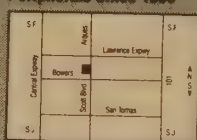
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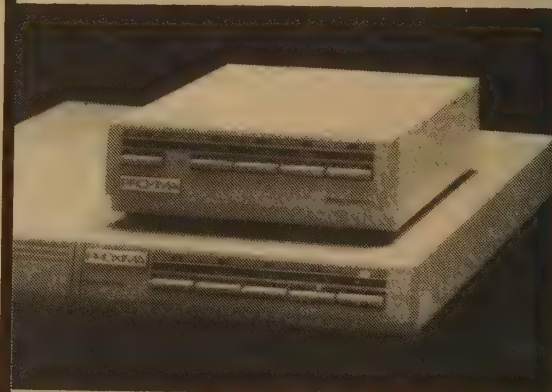


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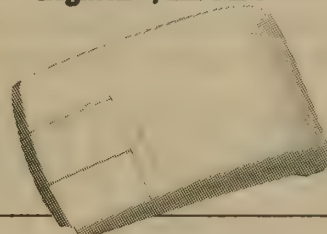
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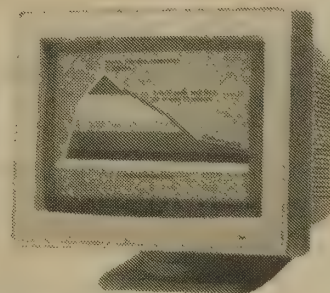
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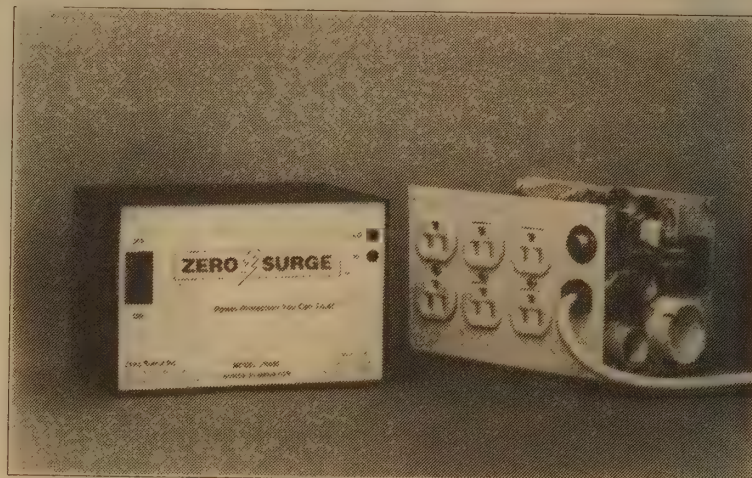
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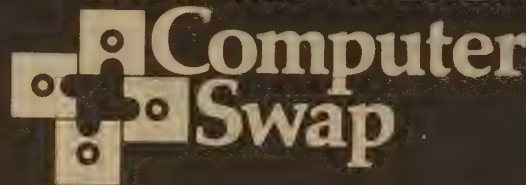
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and then a NetWare file server. Data-Safe allows the user to perform tasks on individual workstations and database servers attached to the LAN, not just at the File Server. (\$195) Computer Aided Business Solutions, Inc., 17000 S. Golden Rd., Golden, CO 80401. (301)279-1868.

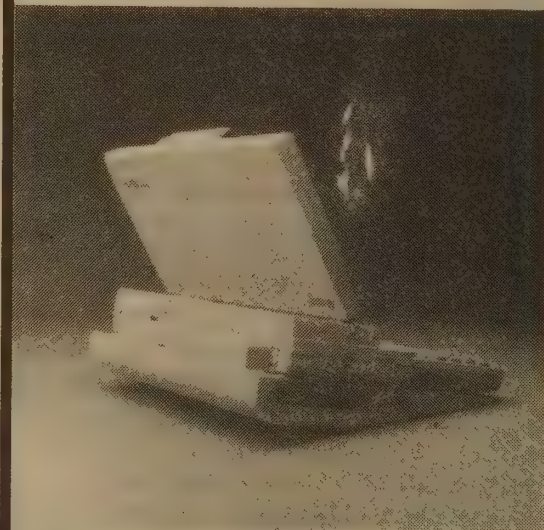
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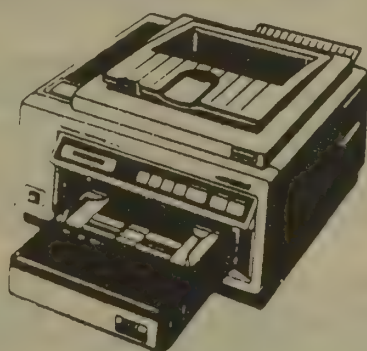
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w/ 80 MB	\$1,049	\$1,139	\$1,189	\$1,289	\$1,439	\$1,499	\$1,399
SX16386 (386SX/16)							
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w/ 80 MB	\$1,249	\$1,339	\$1,389	\$1,489	\$1,639	\$1,699	\$1,599
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w/ 80 MB	\$1,949	\$2,039	\$2,089	\$2,189	\$2,339	\$2,399	\$2,299
w/ 100 MB	\$2,049	\$2,139	\$2,189	\$2,289	\$2,439	\$2,499	\$2,399
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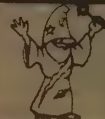
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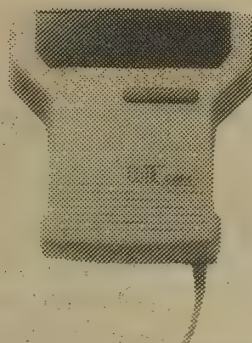
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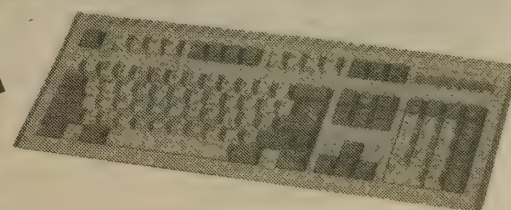
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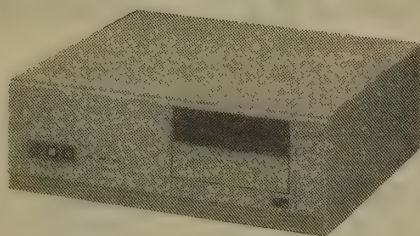
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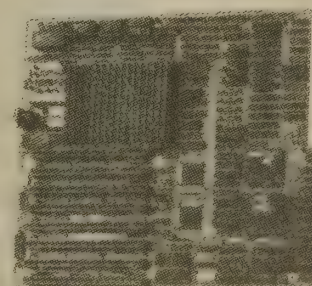


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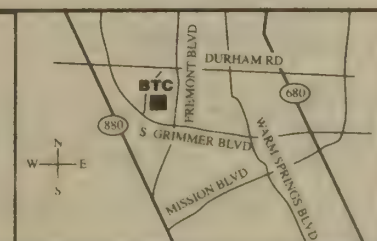
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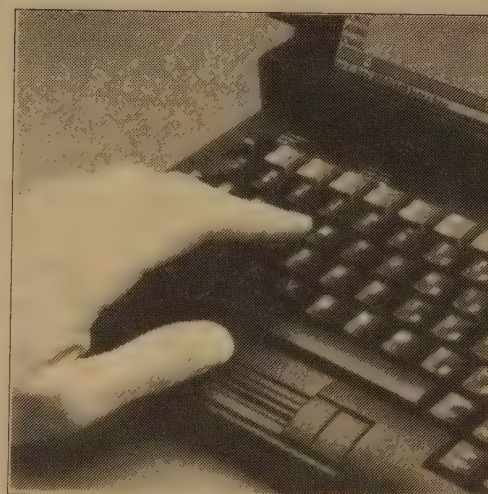
puters. This unit allows a single PC expansion card to attach to the Toshiba. The WonUnder Cradle enables the user to retain the benefits of a notebook-sized computer, while providing some of the connectivity options available to larger PC systems. For example, it supports interface cards such as Ethernet, Arcnet and Token-Ring, and is ideal for adding a remote communication, terminal emulation, graphics or memory card. (\$399) Connect Computer Co., 9855 W. 78th St., Eden Prairie, MN 55344. (619)944-0181.



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continued on page 169

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WD 1006 SR2	135
WD 7000 Fast SCSI	325
WD 10007 ESDI WAH/WA2	175/216
Ultrastor	216
Adaptec 1:1 232B ESDI	195
Adaptec SCSI 1522/1542B	175/265
Future Domain	CALL

• VIDEO CARDS

ULTIMATE 1024x768 256 Color	\$250
Mongraphic Card	35
Microfield Graphic	CALL
Paradise VGA 1024i	254
VRAM 512K/1024i	445/250
ATI VGA 512K	230
Metheus 1140/Primer	CALL
Renaissance RVGA1/II	Special
PixelWorks CA1280-DO8	Special
Cobra 1 B3 1024x800 (256)	Special
Image MGR 1024 2- B3	Special
Orchid ProDesigner II	CALL
Hercules Graphic Station	830

• POWER SUPPLY

AT I/O (2S,2P)	\$35
AT I/O (2S, 1 P, 1G)	35
Vertical Case/Base	198
230W/275 W	50/99
Elgar (Power Backup)	CALL

• KEYBOARDS

Keytronic 101	\$48
Logitech C9 Ser/Bus	79
Trackman	85
Microsoft	98

• MODEMS & TAPE BACK-UP

U.S.R HST All Models	Special
Telebit T1000 (9600B)	\$694
Telebit T25AA (19200B)	959
Hayes	CALL
All Laptop Modems	CALL
Everex 1200/2400 (Int)	72/135
Everex 2400 (Ex)	169
Colorado DJ-10	275
Mountain Tape Back-Up	CALL
Archive Tape Back-Up	CALL

• BEST PRICE CHIPS

DRAM 256-10/8/7 SIMM & SIPP 256K & 1x9/10/8 Co-Processor 287-10, 387-16/20/25/33	
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• FAX

Cannon 20	\$740
PanaFAX KXF100	645
Ricoh RF920	969
Toshiba 3600	895
Sharp F0230	679

• PLOTTERS

H/P 7550A/7475QA	CALL
Roland DYX/DPX/GRX	CALL
Hitachi	CALL
Numonics Series 5500	CALL

LAPTOPS

• TOSHIBA

T1000 SE	\$1159
T1200 HB/FB	1896/1339
T1200H	1705
T1600	2954
T3100E/40MB	2533/3015
T3200/SX	3196/CALL
T5100/100 MB	3920/4480
T5200/100 MB	4644/5006

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PC-252M	1889
PC-4602	1265
PC-4641	1915
PC-5541	3629

• MITSUBISHI

MIT 410	\$2271
MIT 409	4791

• COMPAQ

COMPAQ SLT 286 M20	\$3695
COMPAQ SLT 286 M40	3995
COMPAQ III M20	3295
COMPAQ III M40	3795
COMPAQ 386 M40	5295
COMPAQ 386 M100	6495

• ZENITH

SuperSport 184/1	\$1385
SuperSport 184/2	2085
SuperSport 286/20	2935
SuperSport 286/40	3239
SuperSport 386/40	3585

• NETWORK

HARDWARE

Novell, Gateway, Western, SMC, SCO, Protean, Aquila, 3Com, Synoptics

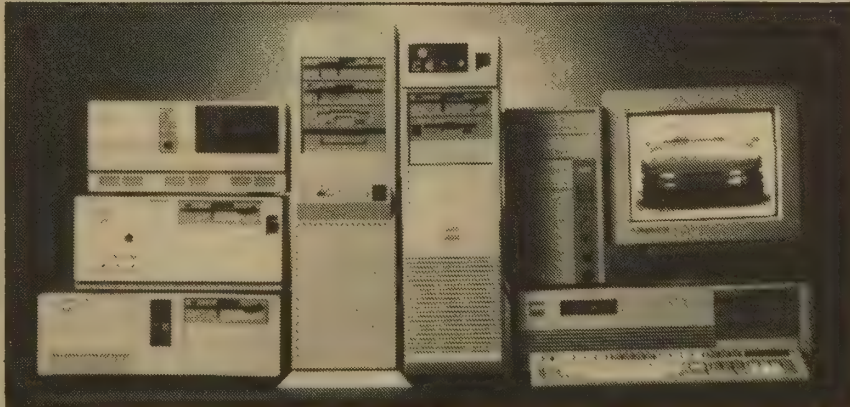
SOFTWARE

ELS Level 1/2	CALL
Netware 2.15	CALL
Xenix, Unix	CALL

• SCANNERS

& DIGITIZERS

Sharp	CALL
Chinon DS3000	CALL
Mitsubishi	CALL
Kurta 12x12 w/Pen	365
SummaGraphics 12x12	345
Hitachipuma	355
Hitachitiger	425
Numonics	476

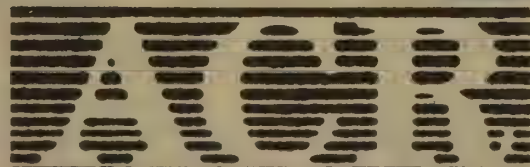
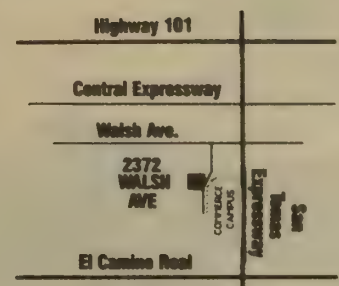


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Fax (408) 727-6484

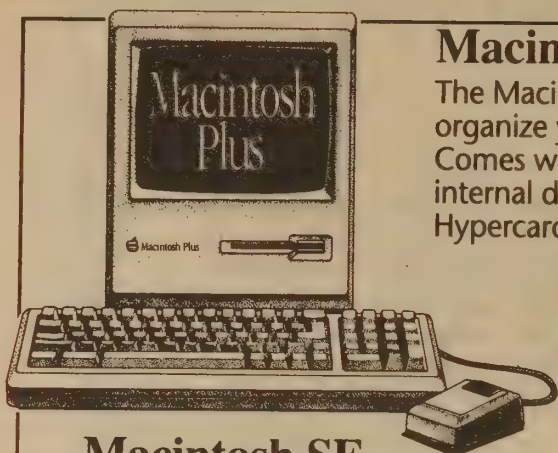
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Sat: 10AM-5PM



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Santa Clara, CA

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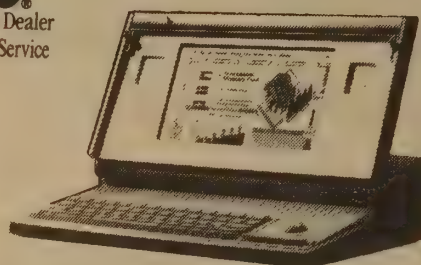
Macintosh® Plus

The Macintosh Plus can help organize your essential data. Comes with 1 MB RAM, 800 K internal drive, keyboard and Hypercard®.



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LIMITED TO STOCK ON HAND.



Macintosh Portable

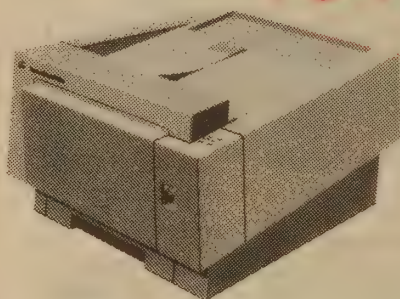
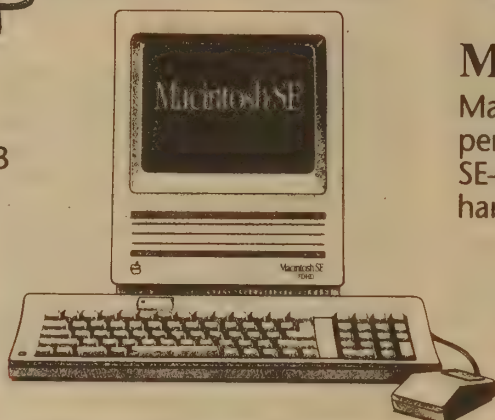
Macintosh portable has twice the performance of the Macintosh SE—comes w/1 MB RAM and a 40MB hard disk.

3870.

Macintosh SE Dual Drive

• Easy to learn, easy to use • 1 MB RAM • 1 exp. slot • Two 1.4 MB FDHD drives
Keyboard extra

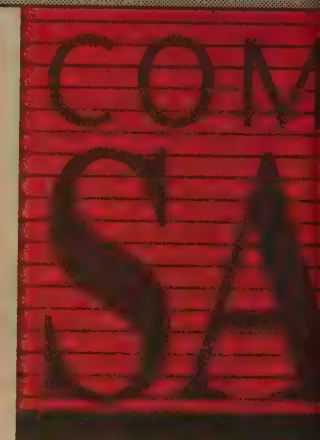
1649.



Personal LaserWriter® NT

Apple® Personal LaserWriter designed for the individual user. The personal LaserWriter NT offers full Postscript printing and a compact design.

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PREMIER

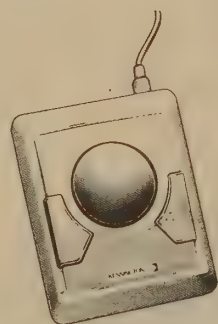
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20 MB.....	399.
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Conserve desktop space with the award winning Kensington Turbo mouse. ADB for Macintosh SE and better. Twirl around your

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Hayes

Personal Modem 2400 Plus and Smartcom™ for the Mac

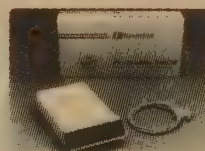
- Includes cables • Easy to install
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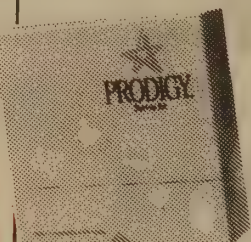
Promodem® 2400M

- A complete communications package • Includes MacKnowledge software



BEST PRICE

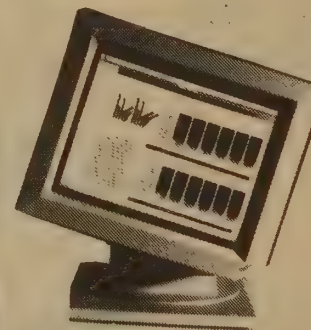
Prodigy/Macintosh Start-Up Kits



Prodigy now offers more exciting on-line adventures and information than ever. Updated Version
LOWEST PRICE

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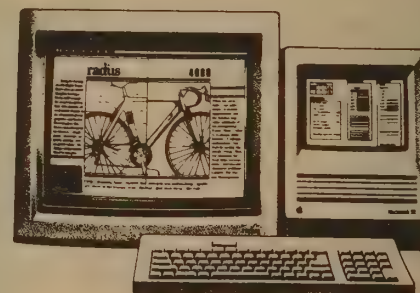
radius



Pivot Display For Macintosh

The revolutionary full page monitor is like having two displays in one. The pivot actually rotates between portrait and landscape orientations. Price includes interface card.

1289.



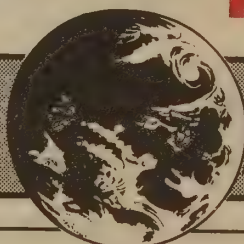
Radius Two-Page Monochrome Display

19" display with card for SE or Macintosh II.
(CPU not included.)

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21" display for the Macintosh

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Macintosh IIx

At 40 Mhz this is the fastest Macintosh ever. Designed for people who need the ultimate Macintosh responsiveness.

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MS737 L4A comes with 4MB RAM and FDHD® drive. Keyboard, monitor extra

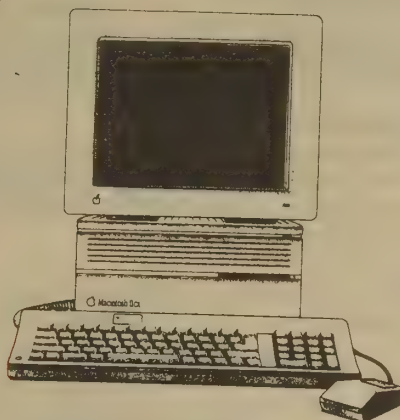
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Macintosh IIcx

The Macintosh IIcx is the most versatile computer in the Macintosh personal computer family. 1MB RAM. Apple FDHD drive.

MS660
Keyboard, monitor, cord extra.

3179.

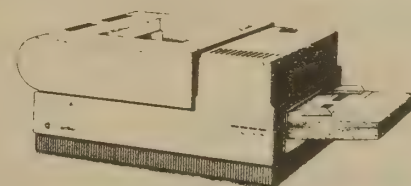


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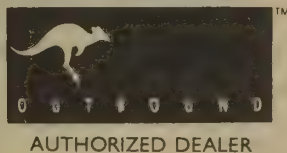
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Laserwriter II NT

With 35 internal fonts, 2 MB RAM, and Postscript, the Laserwriter II NT yields professional quality documents quickly and easily.



3129.



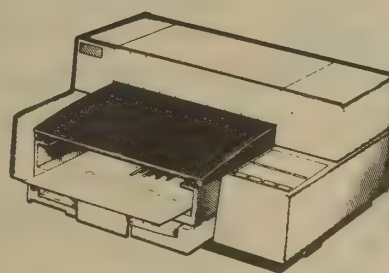
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Outbound Laptop System enhances your Macintosh® productivity on the road or in the office.

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Outbound Laptop Macintosh SE-Interface & 40MB Hard Drive

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ClearVue/GS display system for MacII.....

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ClearVue/GS30 display system for SE/30.....

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Colorboard 208

- 8-bit • Up to 256 colors • 640h x 480v resolution • Can be up-graded to Colorboard 264

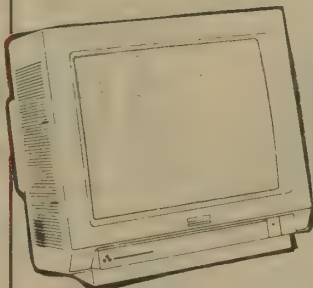
359.



NEC

Mac/Sync

- 640h x 480v resolution • .29dp,
- 14" diagonally with cable and tilt swivel

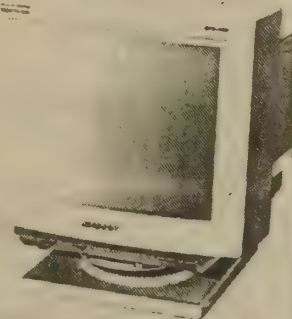


469.

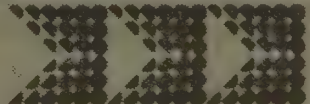
SONY

Sony 1304 HG

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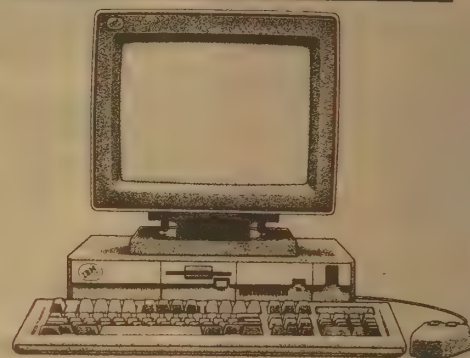
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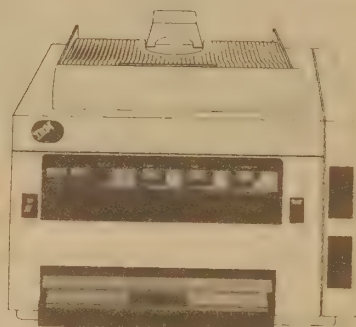
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• 10 Mhz 80286 processor • IBM RAM expandable to 16MB RAM • 1.44 MB floppy drive • VGA graphics on board

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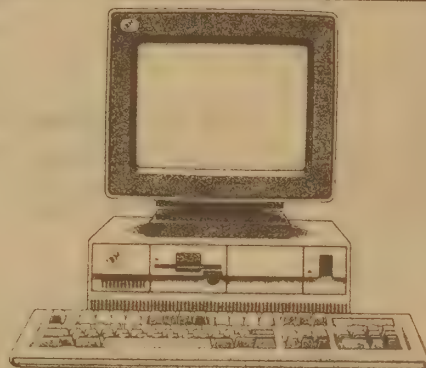
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- HP comp.

4019 IBM
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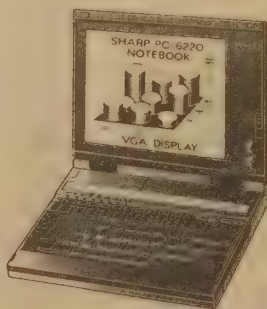
*After manufacturer's rebate when purchased with IBM DOS, OS/2 or AIX. Additional rebate available when purchased with a qualifying printer.

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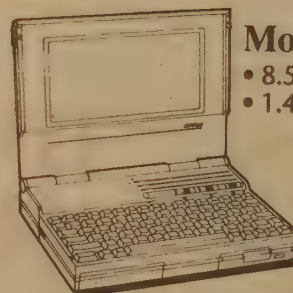
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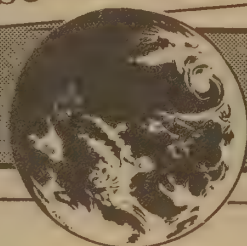
2995.

LTE/286 Model 20 **2995.**

LTE Model 20 **1995.**



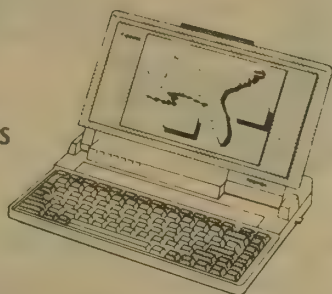
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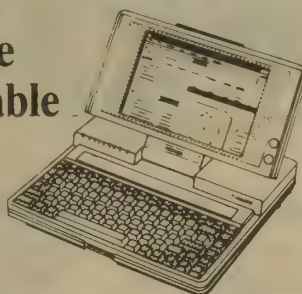
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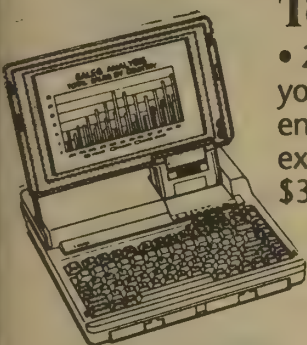
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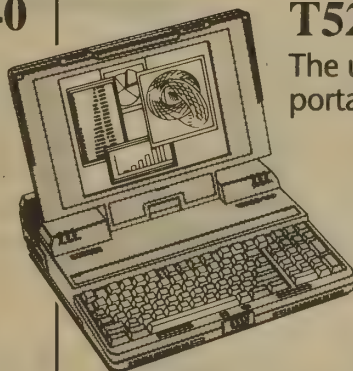


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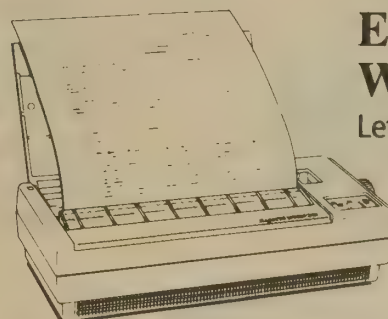
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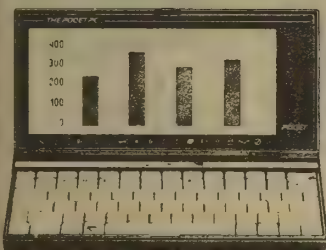


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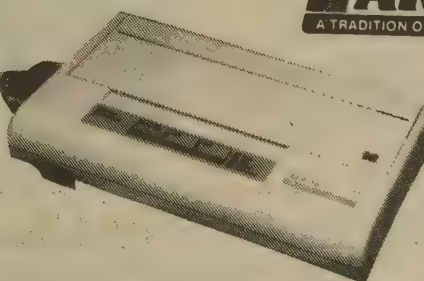


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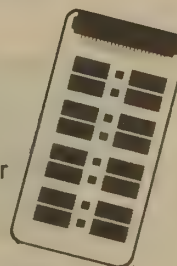
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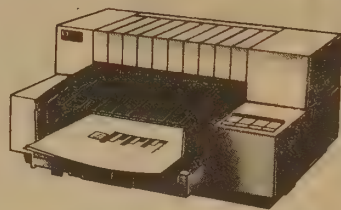
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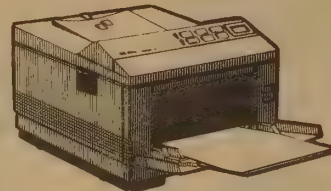
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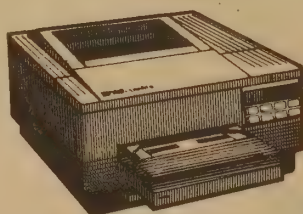


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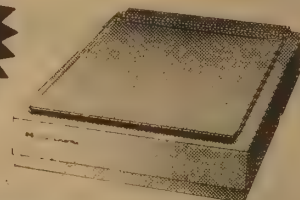
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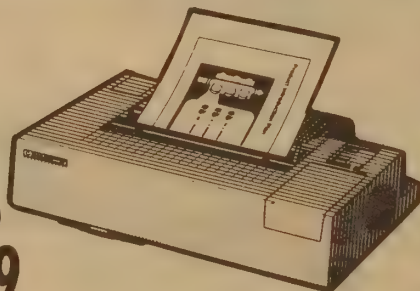
Print Kit for Macintosh

HP color print kit for Apple Macintosh computers

*(Interface required to hook Macintosh with Paintjet and Paintjet XL Printers)

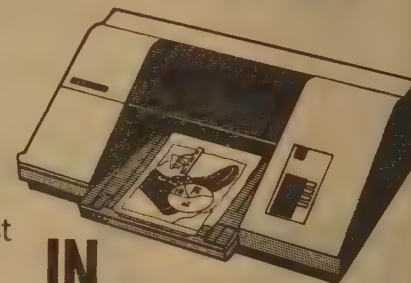
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PaintJet XL Color Graphics Printer

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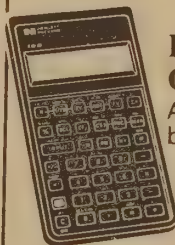


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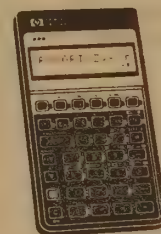
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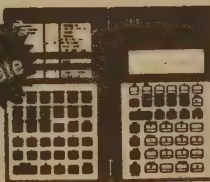
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180.

HP 48SX Scientific Expandable Calc.

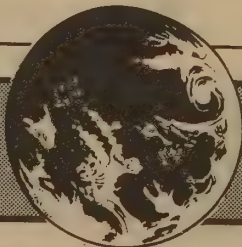
• Over 2100 built-in functions • RPN entry system

325.



Free
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Equation
Library card
\$99.95 Value

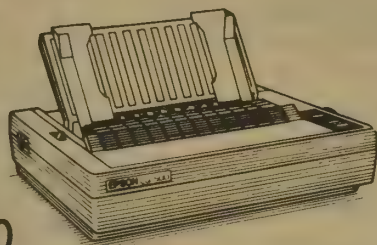
* LIMITED TIME OFFER 8/15 - 10/15 1990. SEE STORES FOR REBATE/FREE OFFER COUPON.



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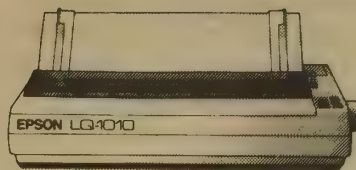
TWO YEAR WARRANTY ON ALL EPSON PRINTERS



LX-810

- 200 CPS draft • SmartPark™ SelectType control panel

179.

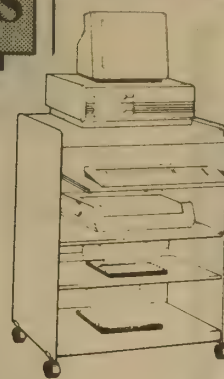


LQ-1010

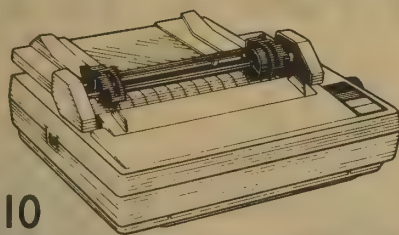
- 180 CPS draft, 60 CPS letter quality
- 24 pin, 360x360 dpi graphics
- SmartPark™ and SelectType • Wide carriage

445.

All-In-One Mobile Microcomputer Center



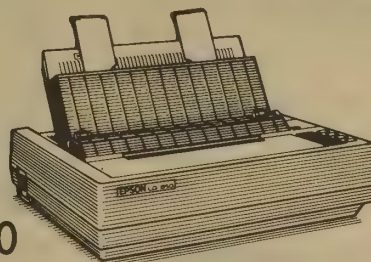
The answer to your storage problem. This space saver is designed to organize your entire microcomputer system – including your printer – in less than three square feet of floor space. Crafted from wood solids and matching veneers, this is a high quality solution for your computer furniture needs.



LQ-510

- Featuring SmartPark™ paper handling
- 180 CPS draft • 56 CPS letter quality • 2 resident letter quality fonts

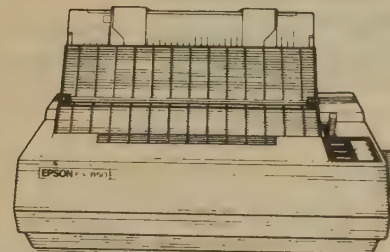
285.



LQ-860

- Epson's newest letter quality color printer • 300 cps draft
- 98 cps NLQ

IN STOCK



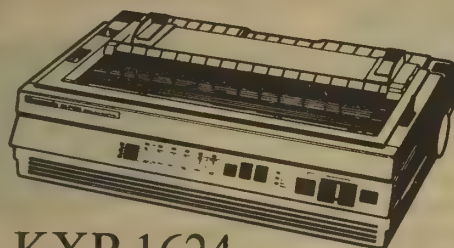
FX-850

- 9 pin dot matrix
- 264 draft 54 NLQ • Push tractor paper park for single sheet feed

369.

Panasonic

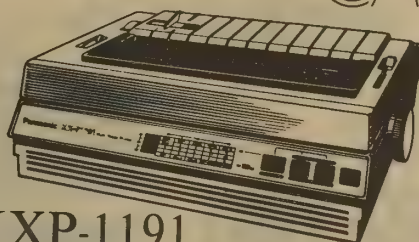
Office Automation 



KXP-1624

- 24 pin • EZ set control panel • 192 cps draft • 63 cps NLQ • 7 resident fonts • 16.5" wide carriage
- push/pull tractor
- 360 x 360 dpi graphics

399.



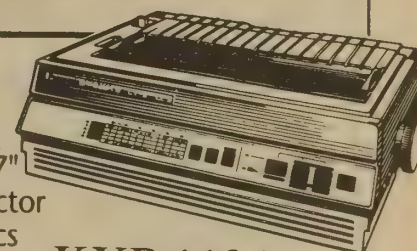
KXP-1191

- 9 pin • EZ set control panel
- 240 cps draft
- 48 cps NLQ
- 6 resident fonts
- push/pull tractor

259.

- 24 pin • EZ set control panel • 192 cps draft • 63 cps NLQ
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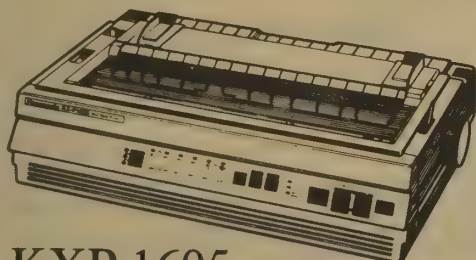
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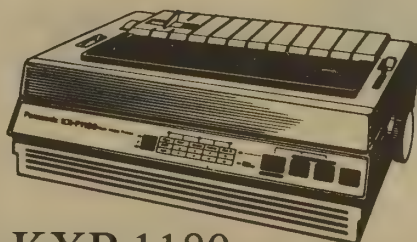
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(408) 554-8300



KXP-1695

- 9 pin • EZ set control panel • 330 cps draft • 66 cps NLQ • 8 resident fonts • 16.5" wide carriage • push/pull tractor • Rear, bottom and front paper feed

395.

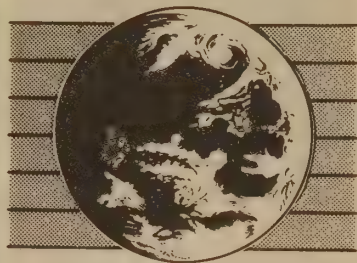


KXP-1180

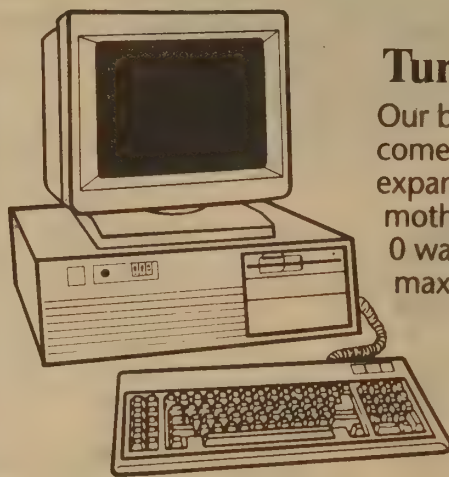
- 9 pin • EZ set control panel • 192 cps draft
- 38 NLQ • 6 resident fonts
- push/pull tractor
- 11.7" carriage for landscape orientation

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- 101 keyboard
- 2 serial 1 parallel port

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386/20Mhz 40MB

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- 1:1 hard drive controller • 64k cache
- 101 keyboard

1495.

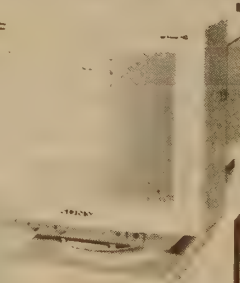
VIDEO

SONY

Sony 1320 VGA

- VGA color monitor
- Analog input
- .25mm aperture grid

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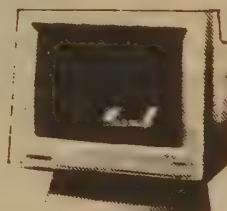


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- 14" VGA color
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Sigma VGA Legend

- 1024 x 768 • 16 colors
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- Upgrade kits in stock (VGA CARD ONLY)



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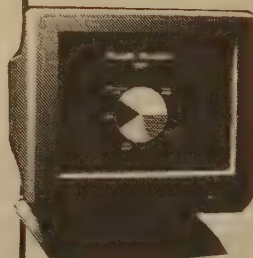
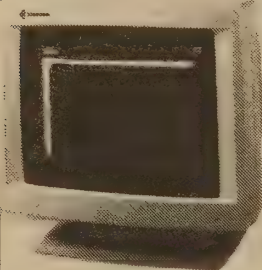


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MZ4575 14" Monitor

- Flat screen • Black and white only • 122 col, 640h x 720v with tilt and swivel

119.



Hyunda HMM-1201A 12" Monitor

- 12" Amber flat screen 720h x 350v with tilt and swivel

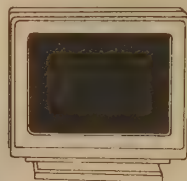
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NEC

MultiSync 3D

The NEC 3D is one of the best multiscan monitors made. 1024x768 resolution means you can use sophisticated Super VGA software and hardware with this screen.

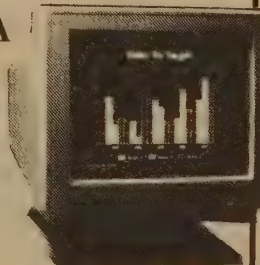
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Hyunda HMM-1401A 14" Monitor

- 14" Amber flat screen 720h x 350v with tilt and swivel

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80387-16SX (16MHZ "SX" SYSTEM ONLY)	329.
80387-20	379.
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80C287A-12.5 (FOR CMOS TYPE LAPTOP 12MHZ COMPUTERS)	289.
BOX287XL (8-29MHZ VARIABLE SPEED)	259.
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HARD DRIVES

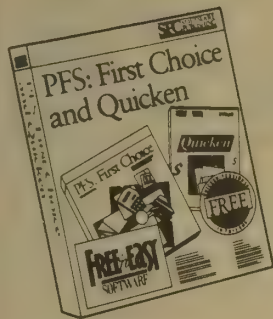
SEAGATE ST 251-1 40MB 28MS	329.
SEAGATE ST 4096 80MB 28MS	579.
SEAGATE ST 277R	379.
MICROPOLIS 1654-7 150MB 16MS	899.
TOSHIBA MK134FA 65MB 28MS	399.
TOSHIBA MK72PCR 110MB 28MS	699.
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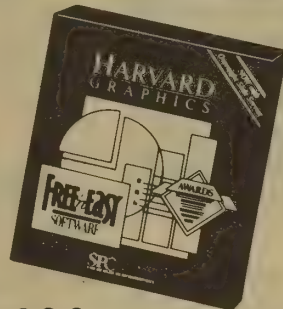
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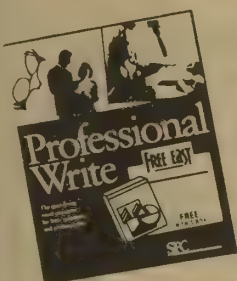


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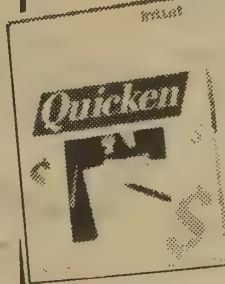
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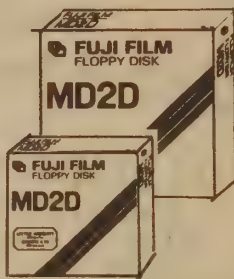
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Fuji Floppy Disks!**



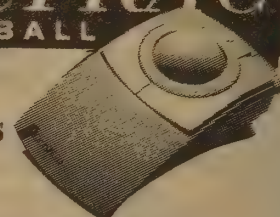
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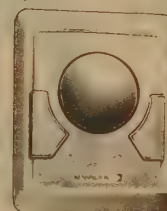
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**Point for Point,
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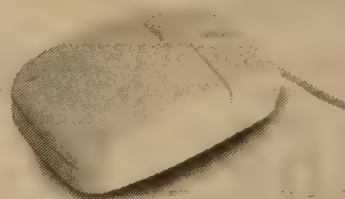


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Serial Version **49⁹⁵** Bus Version **59⁹⁵**

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The Commodore Amiga 3000, developed for the professional user, is a unique and remarkably versatile personal computer. Its advanced hardware and easy-to-use operating system allow corporate and government computer users, graphic designers, videographers, professional musicians, educators and even home computer users to manipulate vast amounts of data and color images.

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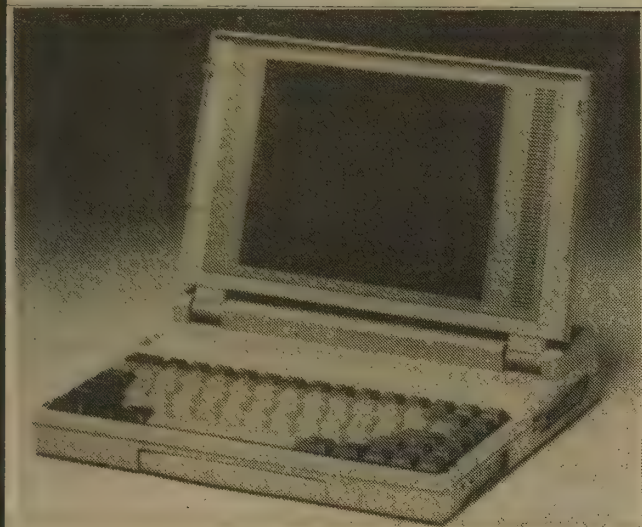
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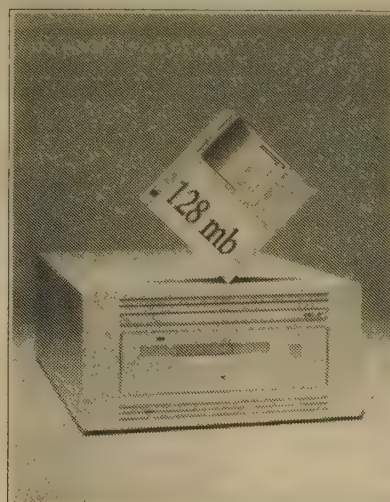
continued from page 158



SAMSUNG S3600 PORTABLE

Samsung has entered the portable market with its S3600 portable computer. This computer is built around the Intel 286 processor, and comes standard with 1Mb RAM, a 3.5" 1.44Mb floppy drive, and an internal nickel cadmium rechargeable battery for three hours of continuous use. Also included are built-in parallel and serial ports, and an external keyboard and VGA monitor port. A 2400 bps Hayes-compatible modem, which fits in the portable's proprietary slot, is available for \$399. (The S3600 with 40Mb hard disk has a list price of \$3,499) Samsung Information Systems America, Inc., 3655 N. 1st St., San Jose, CA 95134. (408)434-5505.

RAM, an external battery charger, an additional battery pack to ensure continuous use, and a carrying case. (\$2,999) Sanyo Business Systems Corp., 51 Joseph St., Moonachie, NJ 07074. (201)440-9300.

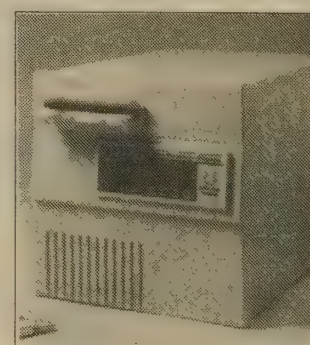


PINNACLE OFFERS 3.5" ERASABLE OPTICAL DRIVE

The REO-130 from Pinnacle Micro is the first 3.5" erasable optical drive, with a quick 28-millisecond seek time. It's available in both external and internal versions, with interface kits for Macintosh, Sun, DEC, IBM, and other computers. Each 3.5" cartridge holds 128Mb of data and lasts ten years. The drive lists at \$2,995; each cartridge is priced at \$129. Pinnacle Micro, Inc., 15265 Alton Pkwy., Irvine, CA 92718. (800)553-7070.

TEN-GIGABYTE JUKEBOX FROM REFLECTION SYSTEMS

For the convenience of a compact desktop storage device combined with gigabytes of data, Reflection Systems is now shipping the RF-10J jukebox. The RF-10J holds up to eleven Plasmon 940Mb write-once optical disks, and is compatible with Plasmon, Panasonic, IBM, and other media. A SCSI-2 device, it's designed to work well with both multiuser and single-user systems,



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HCE SYSTEMS

486/25 System	*3085
386/33/64K Cache System	1190
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386/20 System	895
386SX-16 System	655
286-16 System	555
286-12 System	370

ALL SYSTEMS INCLUDE:

- 1 MB RAM for 386 Systems
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- 1.2 MB or 1.44 MB Floppy Drive
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286-16 MHz	185
386SX	320
386-20	589
386-25	599
386-25/64K Cache	850
386-33/64K Cache	880
486-25/8K	2600

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256 X 9-80/70	18/19
1M X 1-80	5 ⁹⁵
256K X 1-80	1 ⁵⁵
80387DX-25/33	435/545
80387SX-16	305
80287-10/8/6	205/195/125
CPU	CALL

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MISC.

VGA Monitor 1024x768	*370
VGA Monitor 640x480	315
Mono Monitor	70
MS-DOS 4.01	58
101 Keyboard	38
Logi C9 Mouse	66
Vertical Case/P.S.	160
AT Case/P.S.	100

HCE
HyperCom Engineering

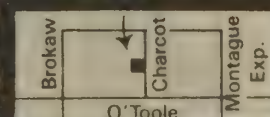
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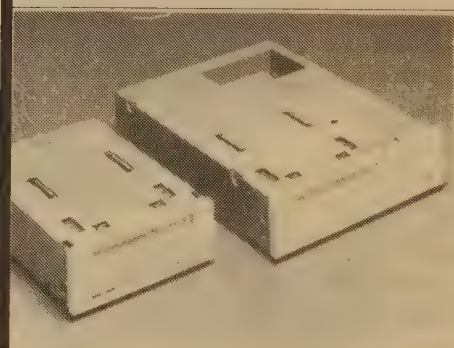
and allows daisy-chaining of up to three jukeboxes. (\$1,295) Reflection Systems, Inc., PO Box 611508, San Jose, CA 95151. (408)432-0943.

RODIME ENTERS DOS MARKET

Longtime Mac hard-drive supplier Rodime Systems has entered the DOS market with a series of Cobra AT internal drives. Available in sizes from 40 to 210Mb, the drives are designed for Compaq and compatible computers; they also come with a full two-year warranty and a guaranteed 24-hour exchange service for drives both in and out of warranty. Rodime Systems, Inc., 901 Broken Sound Pkwy. N.W., Boca Raton, FL 33487. 1-800-688-9390.

COMPACT DAT DRIVE FROM ARDAT

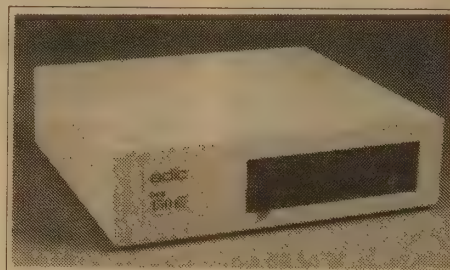
The Python DDS DAT model 4320 drive from ARDAT provides 2.0Gb per cassette (4.0 with onboard DCLZ data compression) of storage along with a small form factor that allows it to be used in many small



computers, including all IBM PS/2 models. Its 3.5" form factor offers significant space savings over previous 5 1/4" models. It's available to OEMs as well as qualified VARs and systems integrators. ARDAT, Inc., 1650 Sunflower Ave., Costa Mesa, CA 92626. (714)641-1230.

AUTOMATED TAPE BACKUP FOR NETWORKS

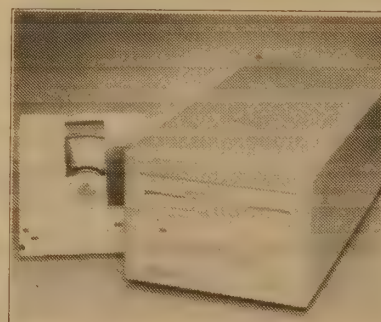
Advanced Digital Information Corp. is now shipping the QIC-150 automated tape backup system, the Data 150. Included with the drive is Data Right, ADIC's scheduling software for unattended backups of Novell NetWare installations. A SCSI device, the Data 150 uses 3M DC6150 cartridges. (\$2,395) Advanced Digital Information Corp., 14737 N.E. 87th St., PO Box 2996, Redmond, WA 98073. (206)881-2296.



MACINTOSH

EASY INSTALLATION SOFTWARE FOR RACET OPTICAL DRIVE

Racet has introduced a new installation software program for its COSMOS 600 Macintosh-compatible MACsimum storage series optical disk drive. The PCMS EZ software allows the COSMOS 600 to be installed in only ten minutes. This software package is bundled with Racet's COSMOS 600 removable and erasable subsystem that features usable formatted capacity of 284Mb per side. Racet Computers, Ltd.,



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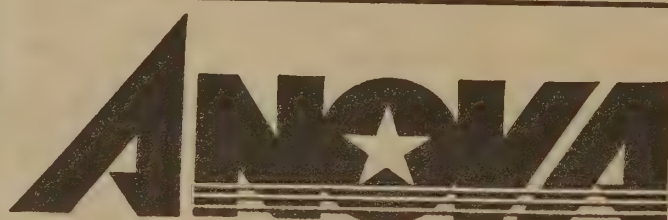
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*8088 Includes Multi I/O, 1 serial, 1 parallel, 1 game, Floppy Drive, 101 Keyboard, Mono card and Monitor, Case with 150 Watt Power Supply

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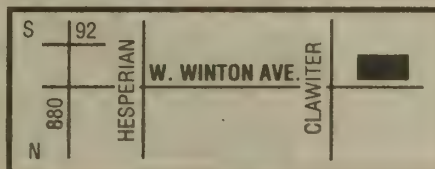
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PRODUCT SPOTLIGHT

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MORE SHADES OF GRAY FOR LESS COST

The NuScan Grayscale Macintosh Scanner from Asuka Technologies is capable of rendering "true gray" in 256 different shades. This hand-held scanner heightens the clarity of a

scanned image through a dot density of up to 400 dpi. The inclusion of PhotoPress, by Blue Solutions, allows the NuScan to enhance a grayscale image and convert or modify the image to color. In addition, a color image can be converted to grayscale. PhotoPress allows the user to open multiple windows so that the user can easily cut and paste grayscale images. It also permits the user to flip, invert and scale all or part of an image. (NuScan Grayscale Macintosh

Scanner with NuBus Scanner Controller has a list price of \$499, or with an external SCSI interface, \$599) Asuka Technologies, Inc., Von Kraman Commerce Ctr., Suite 110, 17145 Von Karman Ave., Irvine, CA 92714. (714)757-1212.

OCCAM CREATES NATURAL LANGUAGE-DRIVEN SOFTWARE

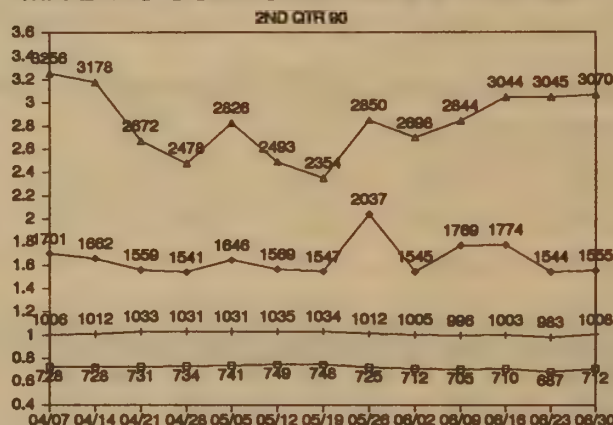
MUSE, the industry's first natural language-driven data analysis software, gives users the ability to retrieve and process data using simple queries in English. Its advanced data dictionary expands with use to accommodate the individual user's question vocabulary. Current individual data analysis tools, such as databases, spreadsheets and graphics can all

be merged by using MUSE, and the time that was necessary to switch between such software packages is eliminated. Data

analysis performed by MUSE is presented as single line answers, multiple-paged analysis WorkBooks or fully labeled graphs of presentation quality. The software is both PC and Macintosh compatible. (\$695) Occam Research Corp., 85 Main St., Watertown, MA 02172. (617)923-3545.

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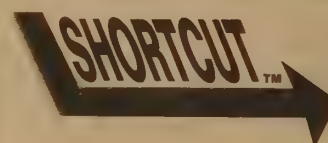
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ALADDIN IMPROVES SHORTCUT, ADDS TO STUFFIT

Shortcut 1.5 is Aladdin's new version of their disk management and file/folder navigation utility. It adds transparent access to Aladdin's Stuffit Deluxe archives and a "View" feature that permits reading, copying and printing of text and PICT files, as well as locating and decompressing Stuffit compressed files. Shortcut includes a Secure Erase command that will "shred" sensitive data from a disk. All registered users of earlier Shortcut versions will receive a free upgrade from Aladdin. Shortcut 1.5 requires a Macintosh with 1Mb RAM, two floppy drives or one floppy drive and a hard disk. (\$79.95) Aladdin Systems, Inc., Deer Park Center, Suite 23A-171, Aptos, CA 95003. (408)685-9175.



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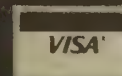
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PRODUCT SPOTLIGHT

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Aapps's new real-time video board, DigiVideo Color (DVC) includes all the features of MicroTV and DigiVideo, and adds an improved speaker and a tuner which is cable-ready, providing access to 98 channels. Included in the package is Preferred Publisher's Exposure, a powerful color image grabber and color CDEV. The speaker and tuner are both Multifinder compatible, enabling them to run comfortably in the

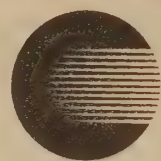
background of other applications. (\$995) Aaps Corp., 756 N. Pastoria Ave., Sunnyvale, CA 94081. (408)735-8550.

SUPERMAC'S COLORPICKER AND SUPERMATCH ENHANCE COLOR USE

Agreements with Tektronics and Pantone have allowed SuperMac to develop and offer two superlative color picking and matching software systems for the Mac. These systems,



Supermatch and Color Picker, promise outstanding results in color matching from screens to output devices, and give the user independent access to the Pantone Color Matching System at a fraction of its normal cost. SuperMac Technology, Inc., 485 Potrero Ave., Sunnyvale, CA 94086. (408)245-2202.



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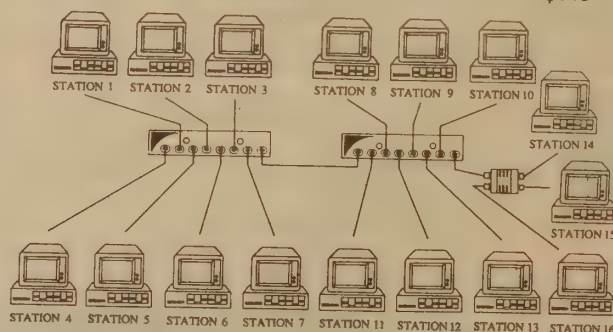
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GAME REVIEWS

By Mike Markowitz

FACES

Designed By: Alexei Pajitnov and Vladimir Pokhilko

Published By: Spectrum Holobyte

For: IBM PC (512K), VGA/MCGA, EGA, CGA, Tandy 1000, or Hercules graphics, Adlib, Tandy or SoundBlaster audio cards supported, joystick optional

List Price: \$40

The third design from the Soviet creator of Tetris and Welltris, Faces is another exercise with falling blocks that must be maneuvered and dropped into place. This time, the blocks consist of chins, mouths, noses, eyes and foreheads that must be assembled into faces in the proper anatomical order. You can get points for a "mixed" face, but you are striving to complete "perfect" faces, with all the parts from the same personality.

The blocks fall in pairs, and you can tap the keypad to switch, flip or move them. When a face is completed, it moves from the playing area to the side of the screen. When a block lands on another in the wrong sequence it turns to "marble." When a stack of marble reaches the top of the screen the game is over. After a few games, I found Faces did not hold my interest as well as Pajitnov's previous creations.

One new feature, which I did not test out, requires a second computer and a second copy of the game. Using modems, or a null-modem cable, you can compete against another player—when you complete a perfect face, your blocked pieces are dumped onto your opponent's screen.

Each level of the game consists of a different gallery of personalities: Along with real people, like Napoleon, Lincoln, Dostoyevski, Mozart, Sitting Bull, Genghis Khan, and Vincent Van Gogh, you'll find Mona

continued

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- HOME BUDGET MANAGER (PF15) Easy to track your financial transactions.

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- COPYQM (UT279) A multiple disk copy/format production system. Copies all DOS-IBM PC formats.
- POWERMENU v4.50 (UT269) A user-friendly tool that tames DOS. A full-featured package. HD Req.

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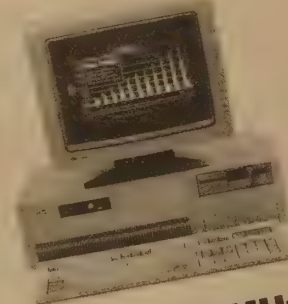
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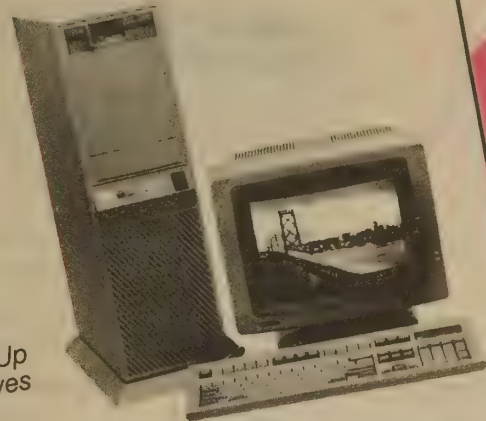
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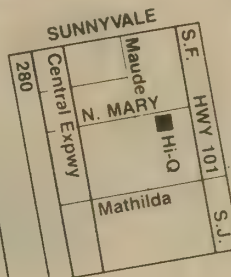
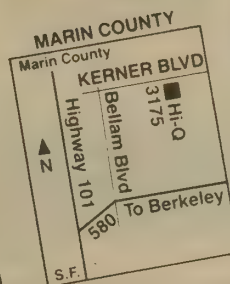
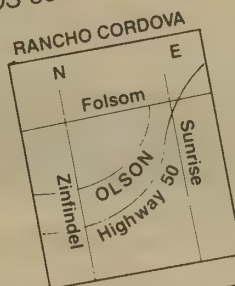
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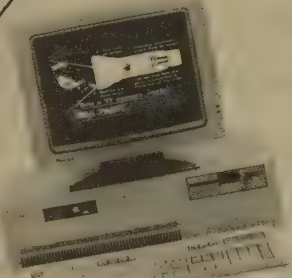
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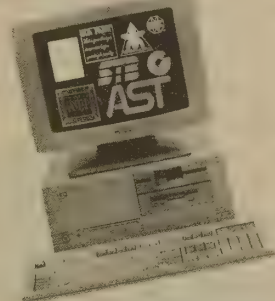
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Between the fall of the Later Han Dynasty in 168AD and the reunification of the Empire by

the first Chin emperor in 265 AD, China was fragmented into small states ruled by warlords. This period, known as the Three Kingdoms, was an awful time for the common people, but it is remembered in art and literature as a heroic age of military glory. A fourteenth-century novel, San Kuo Chih Yen-I (Romance of the Three Kingdoms) is the classic telling of the story. Koei, a Japanese software company, brings it to the small screen as a game (winning Computer Gaming World's 1989 "Strategy Game of the Year"

award). Originally developed as a massive Nintendo game cartridge with its own battery-backed memory, the game survived being ported to the IBM PC. The EGA graphics are elegant; in monochrome CGA the screens are still readable.

Three Kingdoms is an information-intensive historical simulation. Up to eight different players each take the role of one of the leading warlords. If you are playing against the computer, you can select a "rational" or "warlike" opponent—the rational computer personality is much harder to beat. You have to manage a complex economy, dealing with rebellious peasants, greedy rice merchants and weapon smiths, while building up your army and carrying on diplomatic negotiations with friends and foes. Recruiting or capturing generals and keeping their loyalty is the key to victory.

The flow of the game runs in monthly turns, with an opportunity to perform one action in each "state" or province you control. There are fifty-eight states rated according to such variables as population, land value, flood probability, peasant loyalty, cash and rice on hand.

Three Kingdoms is an information-intensive historical simulation. Up to eight different players each take the role of one of the leading warlords.

The game's menu-driven interface presents a bewildering array of choices. We found that it was possible to dump the text of various data displays to a printer (using the standard Shift-Print Screen keystrokes) providing convenient reference sheets for critical information.

When you go to war, or when one of your states is invaded, the display changes to a detailed hexagon-grid map of a single state, with symbols representing terrain and armies. You control where your armies will move and what kind of attacks they will make. Incendiary attacks—setting fire to the rice paddies—can be particularly effective. If a campaign drags on for more than a month, armies in neighboring states can enter the fray.

Three Kingdoms is not a game you can finish in one sitting. There are hundreds of hours of play in this little package. For a Japanese import, the English-language documentation is surprisingly good. Anyone who ever enjoyed humongous historical board games should be pleased with this challenging and complex simulation. ■

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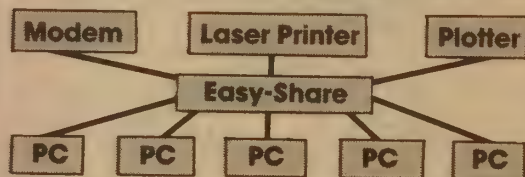
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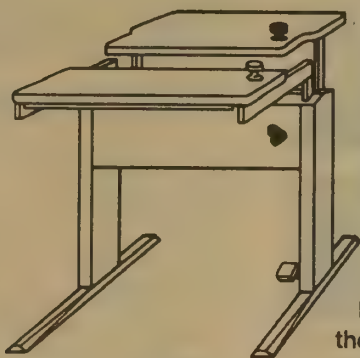


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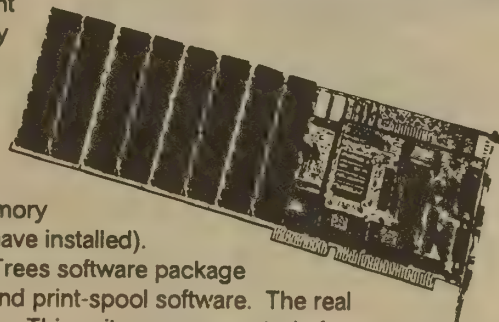
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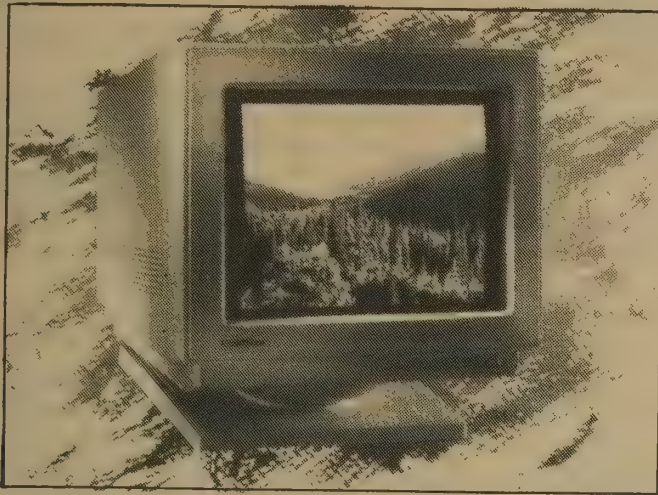
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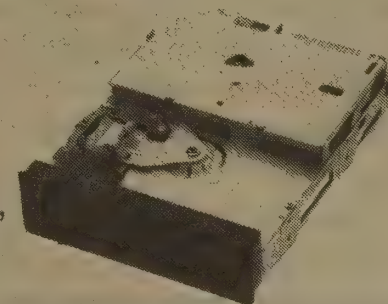
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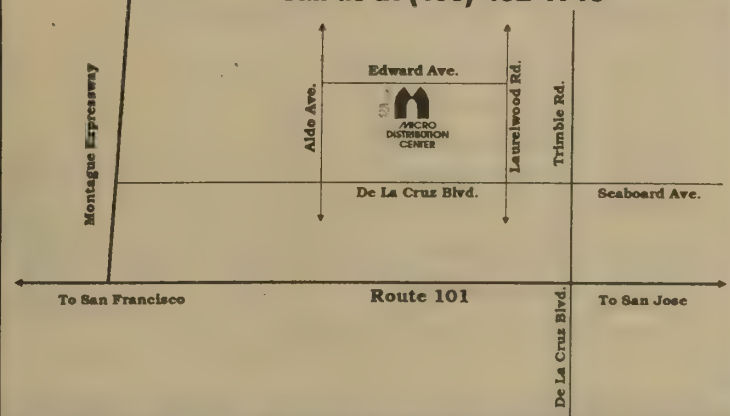
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ZTS-386's Options and Features:

ZTS-386's are based on an enhanced chipset by "Chips & Technology" which is currently dominating the PC industry.

- BIOS and video ROM shadowing speeds up the video & BIOS routines about 15%, tested with "PC Journal" program.
- Zero wait state and memory interleaving, separately set & controlled by AMI BIOS, speeds computing up to 30%, Norton test.
- Programmable BUS and DMA speed! You can easily set the BUS and the DMA speed from 8 to 12 MHz. That prevents conflict at high processing speed and guarantees safe future upgradability!

Also Applies to the ZTS 386 SX

TIPS FROM Z.T.S.

Many 386's run only Microsoft programs under latest Windows-386. ZTS-386 was found as one of the very few computers that proves total compatibility by running other programs under Windows as well (as in Compaq & IBM PS/2). For example using Dbase III under Windows-386!

ZTS-386sx

Landmark = 20.6 MHz
16 MHz 386sx system

Uses "NEAT" chipset. See details on C&T

- 1 MB RAM, expands to 8MB on board.
- 1.2 MB floppy drive TEAC.
- 42 MB hard disk with 1:1 interleave. (IDE, by Western Digital)
- 16-bit controller for 2 fp & 2 HD
- Socket for Intel Co-processor 80387sx.
- Tactile feel keyboard, 101 key-style KB
- Video Card and Monitor Extra



The ZTS-386sx system is designed with the future in mind. It takes advantage of the NEAT chipset from Chips & Technology, which offers you the full capability of the 386 with it's superior features. It's a complete 386 system with 16-bit design. It runs all of the Multi-tasking and Multi-user software.

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ZTS-486i The Hit of 1990

Landmark speed 117MHz MIPS 11.9

We have been working for months evaluating many different 486 systems to select the best performance and most reliable computer system that can ever be built. We insisted on American made system board and will not give up any of the new features of today's technology.

Why ZTS-486 outperforms many others

It is designed to be a true 486 computer and uses the full power of the 486 CPU. It uses a real 486 Bios by Phoenix or AMI. Many manufacturers rush to catch up with today's market, so they just imbedded the 486 CPU to an already existant 386 motherboard with 386 Bios.

- Based on the new improved Intel CPU 80486-25MHz.
- Built-in cache and Math Co-processor. Socket for Weitek.
- Video RAM and BIOS Shadowing, Switchable On/Off.
- CPU Cache design can be enabled or disabled.
- Latest Phoenix or AMI 486 BIOS, supports all 386 software.

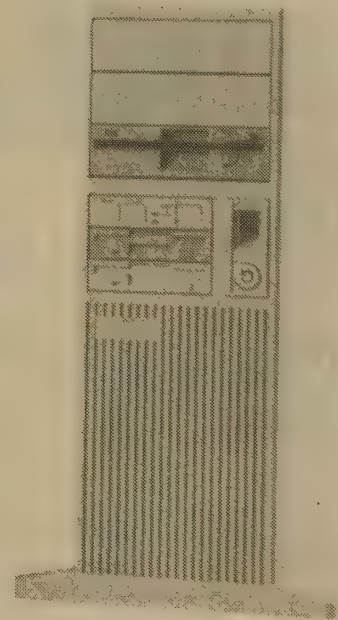
- 205MB IDE HD by Conner. 1225 KB Sec, 3.5" Drive, 16MS, Built in controller with 32K cache. It is the ultimate in fast, error free drive operations. No low-level format is required.
- 235 Watts custom designed power supply with 5000 volt surge protector built in. Noise Free. (Patent pending)
- Full size system board. Uses TTL discreet components.

ZTS-486i Features!!!!

- 4MB RAM 70ns. Expandable to 16MB on the motherboard. It can take 1, 2, 3, 4, 8, 12 or 16 MB of SIMM, 32-Bit.
- 8 Slots, all 16-Bit Slots. Can be used as 8-Bit also.
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ZTS-386 33MHz

Intelligent cache controller design.

64K Cache, Static ram 25ns

Landmark Speed = 55MHz MIPS = 7.5

Basic System Configuration

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 - * Latest BIOS by Phoenix or AMI.
 - * Built-in setup program on booting.
 - * Socket for 80387-33 or Weitek chip.
 - * 1 32-bit, 5 16-bit & 1 8-bit slots.
 - * 16-bit controller for 2 flps & 2 HD.
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Status Report:

How We Use Macs For Publishing MicroTimes

BY MARY
EISENHART

When the boss got the idea, back in 1984, that what we really needed around here was a computer magazine, nobody, except maybe a few fledgling software evangelists at Apple, had ever heard of desktop publishing.

The only actual computers on the premises were a couple of Osborne 1s, which, between their opaque interface and space-saving 5" screen, weren't too useful. On the other hand, DTP isn't what Lee Felsenstein had in mind when he designed them...

We did things the old hard way. Typed the copy with typewriters. Edited it on hardcopy. Sent the edited hardcopy off to be hand-keyed at the typesetter. Proofed the resulting

up on the flats with wax, having first cut the galleys with Xacto knives. Proofed the whole thing on the flats, often discovering a few new errors in the process.

The photos all had to be sized and half-toned and pasted onto the flats by hand. The captions also had to be cut to fit, by hand. It was all terribly inefficient, and took a long time, but that was just how you did these things.

Eventually a few Macs made their way in the door. PageMaker followed. Soon there was a Radius full-page display attached to one of our first Pluses.

Nowadays we have a new set of problems. We still think things are slow and inefficient, but what we tend to be complaining about these days is FreeHand on the IIfx taking five minutes to dump 6Mb of cover type to the LaserWriter for proofing. Or PageMaker 4 being a disk hog—never mind that it just imported a 24-bit-greyscale photo and placed it in a multi-column, multi-typeface, multi-megabyte document.

The problems we have today were unimaginable six years ago. Probably because the tools we're using were unimaginable, at least to us.

We're still years away from the paperless office. However, the typewriters went away a long time ago.

These days we have three publications, and they're all produced on Macintoshes. It's a very rare story that comes in in hard copy—whether it originates on a Mac, a PC, or a UNIX box, it spends most of its life in digital form.

mainly because it works smoothly with PageMaker. However, certain diehards like myself infinitely prefer MacWrite II, and a story might originate in WriteNow, WordPerfect or ASCII and go through several format conversions before it finally gets poured into PageMaker for layout.

Gone are the days of galley-proofing, too. We copy edit the stories on our Macs—in my case, I'll import the document into MWII and make changes, then print it out on the LaserWriter. Knowing that the art department is expecting a Word file, I just save the story in that format. The printout gets proofed. The necessary changes are made to the file on disk. Then the story's laid out in PageMaker, with captions, artwork, headlines, pullquotes and other embellishments, and LaserWritten again for another round of proofing. Once the remaining errors are fixed and miscellaneous layout weirdnesses eliminated, the PageMaker file goes off to the typesetter, where the finished page comes off the Linotronic and returns to be pasted up, in one seamless piece, to the flats.

The savings of time and money are amazing.

Some of us vaguely remember Xacto knives. A few even remember why it used to be important to use non-repro blue pens.

GRAPHICS

In the art department, we're still hovering between the digital and analog worlds somewhat. Because digitizing photos at high resolutions with adequate color palettes is still pretty much the prerogative of high-end systems, with RAM and disk requirements far beyond what's widely affordable on the Mac, we still have our cover photos color-separated by traditional means, for example.

As in the typewriter-and-galley days, we still think things are slow and inefficient, but what we tend to be complaining about these days is FreeHand on the IIfx taking five minutes to dump 6Mb of PostScript to the LaserWriter for proofing.

galleys and corrected the inevitable typos. Proofed the resulting corrections, which often had fresh errors. Pasted the whole thing

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We've more or less standardized on Microsoft Word 4.0 as the word processor of choice,

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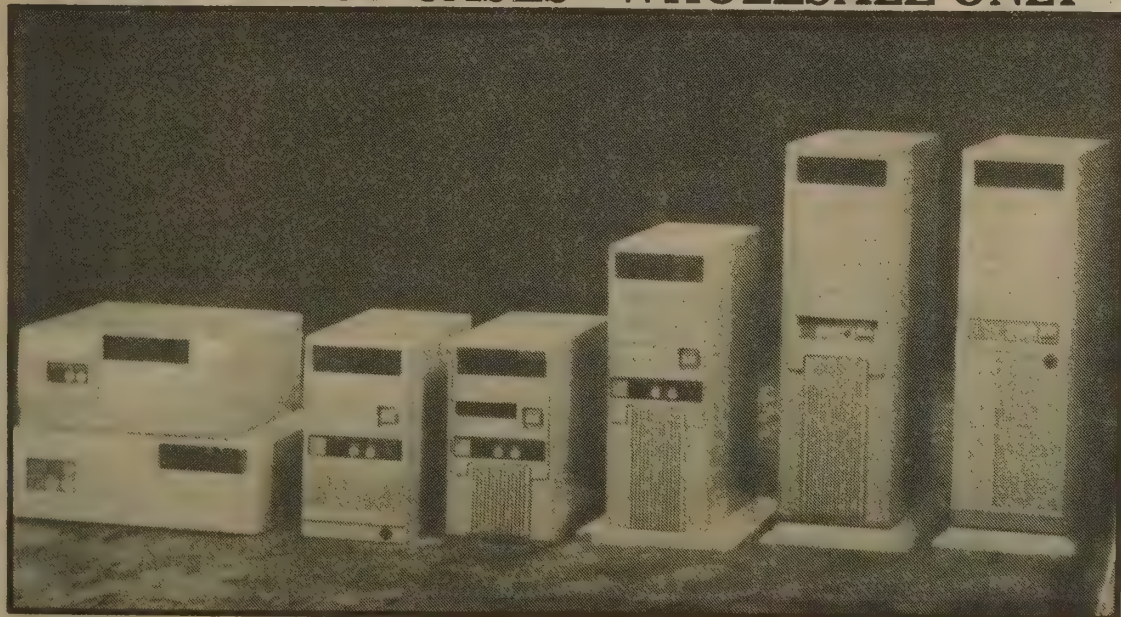
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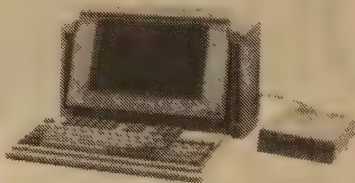
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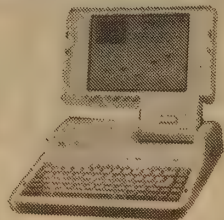
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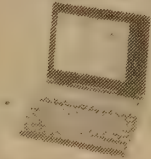
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CREATIVE TOOLS

However, the cover type and layout all happen in Aldus FreeHand, and they're color-separated on film by a Linotronic. The photos are stripped in by the printer.

We're using a Microtek 24-bit scanner to scan photos for inclusion in stories and ads, manipulating them in Adobe Photoshop. However, once again, this has not entirely replaced traditional halftones—one scanner among several busy workstations turns out to be something of a bottleneck, and the scanned files eat a lot of disk.

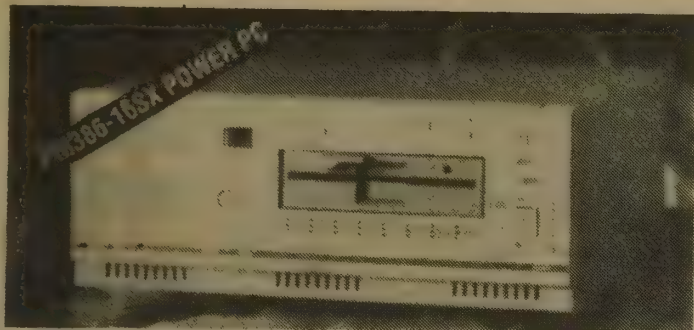
The IIfx, IICI, and IICx are all currently running 24-bit color; the fx is used for the heaviest work, like the multi-meg color files.

Among the software tools, several PostScript-based programs have turned out to be godsend. Multi-Ad Creator is a specialized tool that allows for quick creations of ad layouts, with lots of box tools and type-handling options. Aldus FreeHand continues to be a mainstay for covers and illustrations.

Adobe Photoshop has rendered itself absolutely indispensable, allowing for on-the-fly editing and enhancing of scanned photo and line art. Even for naive users like myself, the program is intuitive, smart and powerful; it supports EPSF, TIFF, PICT and other file formats and works well with the various layout programs. It works well with files that far exceed the Mac's installed memory—the other day I watched in amazement as the 4Mb ci opened up an 8Mb 24-bit-grey file and happily performed the requisite corrections. The tradeoff is that Photoshop (and apparently PageMaker 4 as well) seems to operate by swapping out the excess data to temporary files on disk—the practical result of which is that you can be working on a 1Mb file and have 6Mb free on your hard disk, and get a Disk Full message when you try to use the (highly intelligent) paint bucket tool on large areas.

Like other Macintosh users, we find that each new generation of hardware seems to come with new generations of software that want just a little more storage, a little more power, a little more speed. We become extremely dependent on the software's capabilities. We get irritated with the increasingly powerful hardware because it's not performing miracles fast enough. We become veritable poster children for the "What Have You Done For Us LATELY?" syndrome that probably sends the R&D department at Apple over the edge.

Sometimes I wish we'd kept those typewriters around, just to keep things in perspective. ■



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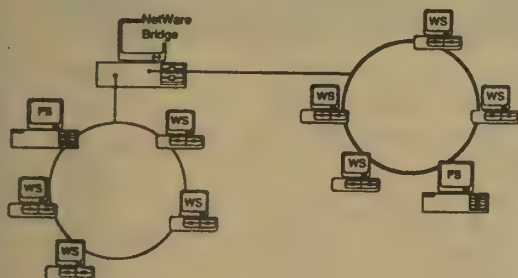
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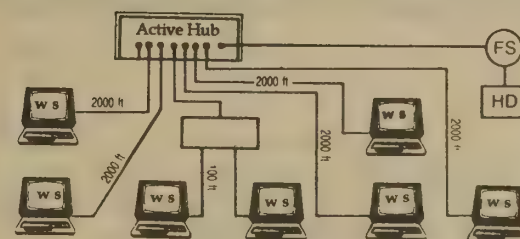
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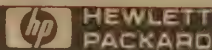
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The Boston Report

BY DAVID MORGENSTERN

The weather was hot and wet last August for the Boston Macworld Exposition. BMUG was there in force, but a few of us had to stay behind to mind the fort, and answer calls on the BMUG HelpLine.

In the Physical Sciences Lecture Hall, the Thursday night meeting crowd waited in the dark for a long distance call from the booth crew. Every few minutes we'd check the line, hoping to have a giant conference rumor briefing. Nothing.

When they got back home the boothies swore they attempted calls from some monster party, but "couldn't get through." What a lame excuse—you'd think that such brainy kids could think up better alibis. I bet they spent all their spare change on cab fare joy-riding around town mooning Bostonian nerds between parties, and couldn't scrape up the dimes to phone home.

DRIZZLE, SWIZZLE, AND FIZZLE

BMUG veterans found this year's Boston show a little flat. Perhaps it was too close to the San Francisco Expo, held in April. They hadn't had enough time to pack their Expo memories in mothballs. I have the same trouble when I visit a wonderful place like Disneyland two years running. I really need a couple of years to develop enough self-willed amnesia to lovingly embrace the return visit. It's the same way with Macintosh shows too.

Macintosh developers have been busy bees crafting nifty products that will utilize capabilities of unreleased computers and system software. Apple allowed products written in HyperCard 2.0 to be shown on the floor, but not System 7.0 software. For many vendors, this was going out to the grand ball in your work clothes.

One developer told me, "My general impression was that the Macworld Expo is stagnant. If Apple doesn't release HyperCard 2.0 and System 7.0, or at least let developers show 7.0 in January, Mitch Hall [the company that runs the Macworld shows] can kiss his ass goodbye. San Francisco will be a dead show." Expo of the Living Dead Macintosh Zombies?

The Macworld Expo/Cotillion is usually *the place* to be seen. In years gone by, publishers rode the shows with presentations of prototype software. Under the scrutiny of the Apple legal goon squad, some vendors didn't even bother showing up at the show. It's too expensive to just show up, and just put out a press release, or worse—to keep dodging questions about the non-disclosed future to every Tom, Dick and BMUGer.

The really exciting things at the Boston Expo were not on the show floor, but in the numerous hospitality suites in surrounding hotels. A new twist this show were special demonstration booths in trailers outside in the parking lot. Entrance was by invitation only, with the honored guests put under non-disclosure, and then fed digital goodies. The word leaking from the select few is of amazing animation software.

What user group has a booth in both Expo halls? This was the deciding question in the Boston Computer Society-sponsored trivia

contest, MacJeopardy. BMUG member Bob LeVitus, a.k.a. Dr. Macintosh, won by correctly answering: BMUG. Our name was not on the lips of the other two trivia hounds, both Easterners.

This year's BMUG commemorative T-shirt featured a parody of the Samuel Adams beer label, a local Boston brew, with Steve Costa, BMUG's Technical Director, as "hacker patriot." Our regular tie-dyed shirts were all the rage with the local thieves. Almost two dozen shirts were stolen from the booth, while the villains ignored an SE/30, hard disk, and other hardware. We were fit to be tie-dyed.

During one particularly hard rain storm, the roof started to leak—right down onto the BMUG booth! It took several hours for the building engineers to haul plastic sheets to catch the waterfall and redirect it into the aisles. Adobe has had some unfortunate past experience with this, and their Boston booth has a separate roof to protect their workers from taking unwanted showers.

The BMUG PD ROM™ Volume II finally hit the streets at the show. The disk contains hundreds of desk accessories, educational programs, business programs, games, and programming examples. It's packed with over six hundred utilities (including anti-virus software), eight hundred fonts (including a library of Adobe screen fonts), and one thousand stacks (including many not available in other collections). You'll be able to find what you need with our blazing browsing index based on HyperCard. The stack includes HyperSearch from Discovery Systems, which allows complex Boolean searching.

One of the problems that delayed the release of the disk was the headache it gave the Mac operating system. The desktop software that tells the Mac what's what, and where, chokes on the thousands of files on CD-ROMs—the PD-ROM II has 13,000! We asked Apple to allow us to give away their solution to this problem, an AppleShare Init called Desktop Manager, but they wouldn't go for that. BMUG commissioned a member of our programming group, Tom Lippincott, to write a program that does the same thing, called DeskTop Secretary.

Some reviewers have complained that our first CD was short

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Copyright © 1990 by David Morgenstern. All rights reserved worldwide. David Morgenstern is a Bay Area "MacNurturer" and BMUG member. David is DMORGENSTERN on MacNET, 72030, 1607 on CompuServe, and himself at (415)549-BMUG.

on sounds and pictures, and the new version has over three hundred sounds, and 2,500 pictures. We've made an effort to be a legal product, something that others have ignored. Many sounds and pictures in digitized collections are copyrighted, and we will not include them on our disks. BMUG has gone to the trouble to get permission from shareware authors—no other vendor of PD software can say the same. The disk is \$100 from BMUG.

The BMUG booth crew was busy working on and off the Expo floor. Raines Cohen's mother lives in a suburb of Boston, and everyone met there for a barbecue party after the show. Lightning struck outside the house, and some metal pipes in the basement created an electrical arc, setting some rags on fire! If the party had been anywhere else the house might have burned down. The BMUG volunteer Fire Department to the rescue.

COLOR MY WORLD MAC

It wasn't all rain on the parade at the show, and the fifty thousand people that walked through the doors got their money's worth. Here are the products that remained wedged in the BMUG attendees' consciousness after a week's recovery.

•The hits of the show were screen savers, or as Steve put it, "major advances in screen saver technology." Shark Protector by Ibis Software of San Francisco is a fully functional interactive game that keeps track of the score, masquerading as a screensaver. The software comes with a plastic shark fin that attaches to the top of your monitor.

After Dark 2.0 was released at the Expo. Berkeley Systems had a contest for modules, and some of them were included in the package. This modular screen saver now plays sounds along with the displays. Flying toasters (you can change the toast from light to dark), and the Fish module (beautiful on a color monitor) drew appreciative crowds.

•AddMotion by MotionWorks of Vancouver, Canada, was big news for HyperCard users. The product is a 24-bit color paint program hidden in an XCMD that can be used within HyperCard 2.0. One of the neat things about the program is that moving color animated character/buttons can be assigned HyperCard handlers, making it very interactive. Get ready for home-brewed HyperCard-based color animated games. Other XCMD-utilizing programs, Wingz, 4-D, or MicroPhone II, will be able to run wild with color animation. Your AddMotion purchase enables you to distribute their run-time, which doesn't display an obnoxious

advertisement like the VideoWorks driver.

•DiskTwin by Golden Triangle was showing in the PLI booth. This definitely deserved the hardware hack of the show award. The product is a NuBus card for Mac II computers (SE/30 version out soon) that has a SCSI port out the back.

The user takes two hard drives, puts one on the DiskTwin, and the other on the regular SCSI port. Everything that happens on the primary drive is mirrored on the twin drive. Copy a big file, and the backup is instantaneous and transparent, with no degradation in performance. These parallel buses use a technology called disk duplexing, that's been used in larger computers for years. Look, Ma—the baby's duplexing!

•Compression was very big (is that a contradiction, or what?) at this Expo. Apple showed new compression/decompression software from its Advanced Technology Group (ATG) that may become part of QuickDraw, the foundation of Mac graphics. They claimed that this incorporation might occur by the end of 1991, perhaps in time for System 8.0.

SuperMac was showing a board and software that compressed and decompressed 24-bit pictures and video in real time. Roger Rabbit made an appearance in their booth. C-Cube of San Jose was trying to push support for its compression chip in hardware and software.

Everyone's waiting for a number of international standards groups to finalize their designs. The Joint Photographic Experts Group (JPEG) will probably finish their work this year for a 20-to-1 compression of still images. This standard can be used in video as a succession of still images at 30 frames per second. The Motion Picture Experts Group (MPEG) will bring a 60-to-1 compression factor when it's released in Fall 1991. Apple is hanging its hat on the MPEG standard, knowing that heavy-duty real time compression and decompression is the road to the Multimedia City.

•The BMUG consensus was that the significant Expo trend was booth giveaways. Some young members compared it to Halloween "trick or treat" candy begging. In return for filling out a marketing

There must have been a brisk business in fake Expo passes last April, because the Boston passes had special invisible ultra-violet sensitive markings. I bet show promoters must love the new color laser printing technology floating around laser parlors. Extra badges? No problem.

UPCOMING EVENTS:

- October 18** TimeWorks *Publish it Easy*, BrightStar Technology *InterFace*.
- October 24** SF BMUG West Meeting. Group Technologies *Aspects*, Radius *Radius TV*.
- October 25** Ceres Software *Inspiration*, Adobe *Illustrator 3.0*.
- November 1** David Haddick *Ultimage* (image processing), Promentory Systems *Wiz* (input device). Or Bill Gates may show up!
- November 8** Noetic Systems *Ergo* (expert systems), Paracomp *Swivel 3D*.
- November 15** Casady & Greene *Skyshadow*, New Bridge Micro *NEWLIFE* (upgrades).
- November 22** Thanksgiving Holiday. No meeting.
- November 28** SF BMUG West Meeting. Adobe *Illustrator 3.0*, Digidesign (audio boards).
- November 29** Qume (printers), Global Village *Communication Teleport*.

Call the BMUG Office for information about BMUG West, our San Francisco meeting, and Bill Gates rumors.



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survey, or listening to a demo, attendees received cameras, sunglasses, or clothes. One lucky BMUGer picked up around twenty different items. This marketing strategy is much like the older, fancier, and jaded commercial electronic shows, like COMDEX. A couple of Expos ago, the BMUG booth handed out condoms with our anti-viral disk, but that's small potatoes compared to squirt-guns and boxer shorts.

•Parties seem to have taken a back seat to the toy giveaways. Last year's Boston Expo had a five-page party list, while this year's shrunk to only two. Apple didn't even have a party. The parties that existed were scaled down—one thousand-person parties were down to two hundred. BMUGers who could usually count on eating dinner while party hopping had to dip into their wallets this summer. Poor babies!

The MacWEEK party was considered one of the best by people that found it. The party was held in an upstairs pool room above the Club Zanzibar, a huge bar. There was a block-long line to get into the club, with a tough bouncer. The only entrance to the party was through a secluded elevator near the front door. Unlucky, or unobservant, party-hopefuls that actually had invitations hung out in the bar, paying for their drinks, complaining that a "real party" would have provided food and drinks.

•There must have been a brisk business in fake Expo passes last April, because the Boston passes had special invisible ultra-violet-sensitive markings. I bet show promoters must love the new color laser printing technology floating around laser parlors. Extra badges?

No problem. The poor guards, bathed in a constant purple tanning salon glow, watched people's badges as they entered the Expo. No one saw anyone caught by this over-baked patrol.

That's your tour of ExpoLand Boston. Please deposit all non-disclosure materials in the waste paper bin to your left as you exit the hall. We can only hope this is the last System 7.0-less Expo we'll have to encounter. If not, we'll take our medicine without complaining. Too much.

TOP TEN LAND

A few of us are competing every week with dueling top ten lists, presented to the Thursday night main meeting. Scott Kronick won this month with the following list:

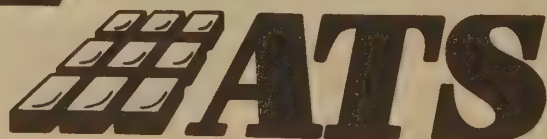
Top Ten Worker's Compensation Insurance Claims Filed at Apple Computer

10. Tainted alfalfa sprout and mung bean dip consumed at company picnic.
9. Intense nausea among staff who must proofread Legal Department's copyrights and licenses.
8. Laryngitis from starting, then denying industry rumors.
7. [Censored by MicroTimes Legal...]
6. Rash from toxic printing ink used in Macworld magazine's monitor health scare issue.

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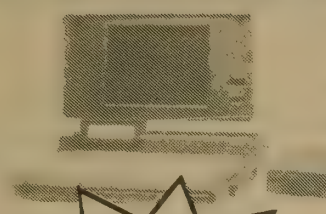
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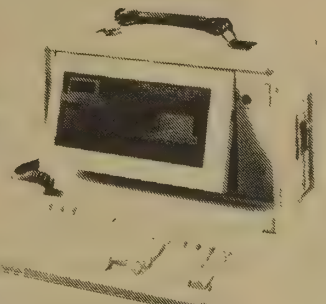
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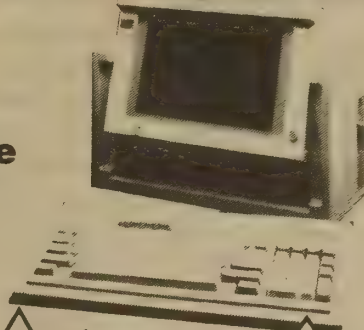
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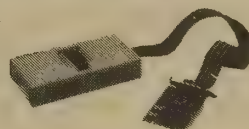


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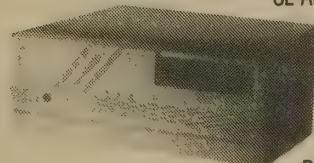
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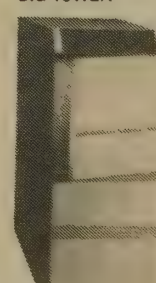
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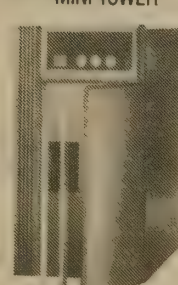
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BMUG is an educational nonprofit consumer advocacy group organized to share information, and provide critical direction to users and developers in the computer community worldwide.

Like any growing organization, it is many different things to its 10,000 international membership. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, publications, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6-9 pm (or whenever we finish), in the Physical Sciences Lecture Hall on the UC campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG HelpLine, (415)849-HELP, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (11am-5:30 pm). If your question can't be answered on the spot, we try get you in touch with someone that can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around, with 400+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ 2.0*, our entire library and more on CD-ROM—according to Apple, it's the best-selling CD-ROM!

Our BBS offers many of the latest versions of files in our software library, as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are, as well as send mail to users everywhere! BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com) or (user.name@BMUG.FIDONET.ORG). With our multi-line capability you are now able to have access to BMUG almost 24 hours a day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut St. #62, Berkeley, CA 94709. If you prefer to phone our business office, call (415)549-BMUG, or Fax (415)849-9026.

5. Carpal tunnel syndrome while trying to please Virtual Valerie.
4. Jagged vision when wild bunch from Adobe spiked Christmas party punch with LaserWriter toner.
3. Recurrent nightmares of empty wasteland and meaningless void ever since Steve Jobs left.
2. Recurrent nightmares that Steve Jobs might come back.
1. Hernia while attempting to lift Mac Portable.

SHAREWARE SHELF

The Apple HyperCard Users Group puts out a newsletter called Win-doid. It's filled with articles on HyperCard, scripts, and tips for all different kinds of users. BMUG has collected the stack versions of the newsletters and put them all on a disk. Some of the stuff is a little dated, but there's lots of good help to beginners learning HyperTalk.

Apple has finally decided to let BMUG distribute ResEdit 2.0 developmental versions. The program sports a much improved interface, and supports sounds and color.

A good informational companion to the new ResEdit is a file called HMG ResEdit Primer 5.0 by Herb M. Goodman, on our Utility 30 disk. Although the ResEdit Primer is designed around ResEdit 2.0, it can be used for any version of ResEdit. Some windows may look different, but the basic procedures and principles still apply. Herb covers adding new icons to your programs, animating cursors, and lots of fun stuff. It's in the self-reading DocTor format, and you can print it out if you wish a hardcopy.

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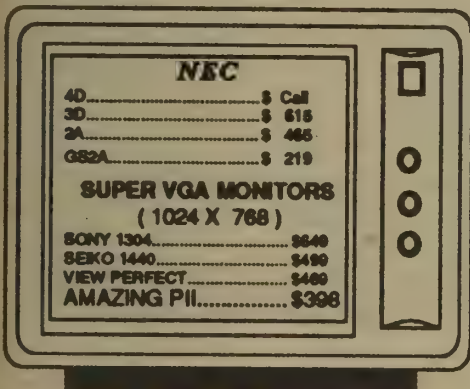
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Video Tools And Real World Issues

BY MATTHEW LEEDS

The Amiga's greatest success has been in graphics, specifically in that aspect of graphics that relates to video. The blessing (and curse) of its design makes it inexpensive to interface to video tape recorders, and it offers a very good price/performance ratio for professionals on a budget.

But it's not just professionals who are using the Amiga. At the same time that the Amiga has brought computer-generated graphics for video within reach of the consumer, innovations by the video industry have brought production-quality video hardware within reach of the non-professional. The results have sometimes been creative, quality productions; sometimes far short of that mark.

AMIGA

Just as when the Macintosh brought desktop publishing into the hands of the inexperienced, we've seen that access to

tools does not guarantee expertise. While not every video needs the same production values as a feature film or even a television commercial, certain minimum standards should be applied to any work that expects acceptance in the business marketplace.

It's easy to get information on Amiga video products. Every Amiga magazine, and many video magazines as well, is constantly filled with articles touting the latest ray-tracing or titling package. Getting good solid information on lighting, composition, editing, sound—all the elements that make the difference between a stew of techniques and a gourmet presentation—that's a different matter. This month I'd like to pass on two resources that budding video producers might find useful.



Copyright © 1990. All rights reserved. Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.

LOWEL-LIGHT

Good video requires great lighting. Since video can't handle nearly the contrast ratio of film, getting a handle on the three critical components of lighting is essential. If you don't know what they are, if terms like gobo, scrim, kelvin temperature, and snoot sound like a foreign language, you should contact Lowel-Light to get their *Lightnews* newsletter.

Lowel makes lighting equipment for still, video, and film production. They've been doing so for a long time, and their stuff is rock solid. *Lightnews* is touted as an occasional, casual compendium of illuminating ideas, timely tips, pertinent propaganda and advice to the lightlorn. It's also a freebie with lots of very useful info on equipment, technique, concepts, and the art-and-craft of lighting.

STEADICAM JR

The second tip revolves around a new gadget called Steadicam JR from Cinema Products. Remember the scene in *Rocky* where the camera followed Stallone up the stairs? The forest chase scene in *Return of the Jedi*? The opening sequence in *Ghost*? They all were fluid, smooth takes that seemed to be done by a camera floating in space. They were done with the professional version of the Steadicam.

Steadicam is a camera mounting system that combines a camera operator's body vest with an articulated spring-loaded support

arm. Counter-balanced to dampen all movement induced by the operator, a professional Steadicam system takes months to master, and costs around \$40,000. The Steadicam JR runs \$595, and you can be up and running with it in less than a day.

The complete system weighs about two pounds. Your camcorder is attached to a mounting stage. This stage can be adjusted on two axes to perfectly balance the system. A inter-gimbal handle is used to support and control the camera. A high-resolution 3 1/2" monochrome LCD monitor is attached to the front of the Steadicam for viewing, since the operator cannot use the camcorder's viewfinder. A fill light that attaches to the camcorder is also part of the system, as is a training tape and a power supply with batteries. The Steadicam JR can also be folded up and used as a shoulder support.

This version of the Steadicam will only work with camcorders that weigh under four pounds. In general this means that you'll use 8mm or VHS-C camcorders with it. If you

At the same time that the Amiga has brought computer-generated graphics for video within reach of the consumer, innovations by the video industry have brought production-quality video hardware within reach of the non-professional.

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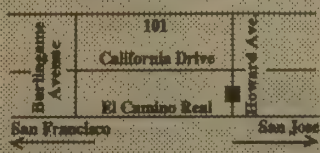
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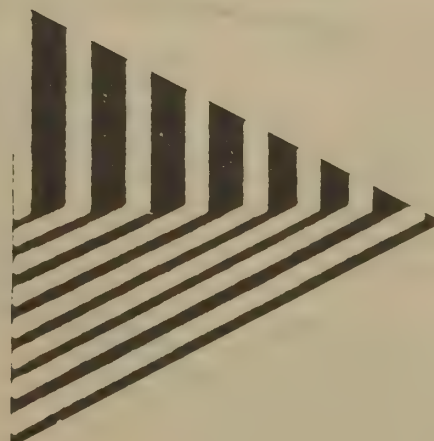
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own this type of camcorder, you've got to check out the Steadicam JR.

I've got a third tip to pass along. Although I haven't had a chance to review this hardware yet, Showline Video is about to release a new time base corrector that works with S-VHS and Hi-8. The projected list price is \$1,295, less than half the current price of similar equipment.

REAL WORLD ISSUES

I rarely deal with political issues in this column. I figure that you get your daily dose from other media, and read this column for its Amiga-specific contents. Things from my perspective are getting out of hand however, and I'm going to take advantage of my soapbox for a few hundred words or so.

Let's start with something called Operation Sun Devil. This is a nationwide Secret Service operation in which several citizens found their computers, hard disks, floppies, printers, and anything else computer-like confiscated. In many cases, months later no charges have been filed and the equipment

has not been returned. The media have described those raided as hackers, but this seems a thin rationale for the events that occurred. If you own a modem, you may end up on one of those "lists."

For those of you in California, you should know that your state legislature attempted to make it a misdemeanor to sell any computer game that included references to tobacco or alcohol products or packaging. This of course was for your protection. The bill is AB3280, proposed by Assemblywoman Sally Tanner. Through the efforts of several members of the computer game developers community, the bill was modified to only prohibit paid advertisements, and it is now awaiting Senate approval.

The ugly specter of censorship has appeared in many guises recently. From Jesse Helms's manipulations of the NEA to the seizure of Jock Sturgis's photography, the encroachment of government "protection" into our lives seems to be accelerating.

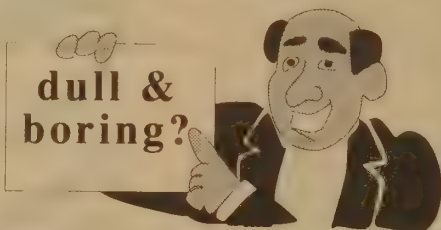
I'm not in favor of encouraging children (or adults) to use tobacco or to abuse alcohol. But I am very concerned by our

While not every video needs the same production values as a feature film or even a television commercial, certain minimum standards should be applied to any work that expects acceptance in the business marketplace.

government's attempts to "protect" us at the cost of limiting our choices. The First Amendment sits at the top of the Bill of Rights for a reason. We all need to be diligent about keeping it there. ■

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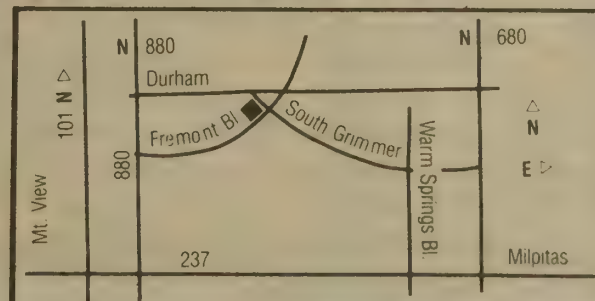
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Word Processing With Flair

Sophisticated Document Preparation With Wordflair

BY DAVID
HAWKINS

ATARI ST

There's almost an embarrassment of good word processors on the Atari ST. I could easily settle for using either WordUp or WordPerfect for everything.

Occasionally, though, a new product will show up that's so good I can't pass on it. Wordflair is one of those products. (Wordflair

is available from Blue Chip International, Inc., 501 2nd St., Suite 414, San Francisco,

CA, 94107. 415-243-9605.)

WHAT'S A DOCUMENT PROCESSOR?

Strictly speaking, it's more accurate to refer to Wordflair as a document processor than a word processor. If you're writing a six-hundred-page novel, Wordflair might not be your best bet. But if you want to put together forms, specialized letters, technical papers, or newsletters, Wordflair is ideal.

Wordflair lets you create documents that combine text, graphics, calculations, and data. It's different from most desktop publishing programs because you can use it to write the text in the document itself, instead of reading in prepared files.

REGIONAL WORK

Wordflair assembles a document by making different "regions" available. The Write Region is like having a window just for word processing. You can go to a Write Region and start typing, and later modify the text, change the font, or reformat the document. It's mainly an area where you can put in the text you want to deal with.

Calc Regions are areas in your document where you can have Wordflair perform calculations and show the results. If you were doing a newsletter that included budget information, you could put in the numbers and have Wordflair add up the numbers for you. Then if one of the numbers changed, you'd just change it in the document and have the program go through and do the rest of the changes.

GRAPHICS

Wordflair also has Graph Regions. You can read in graphic files and make them part of your document. Wordflair also has a way for you to draw in a Graph Region if you want to do a quick sketch as part of your presentation.

The Graph Regions also can be used to present graphs. Wordflair can take data and make a pie, bar, or line graph as part of the work. I was impressed at how easily Wordflair could take data displayed as a pie graph and convert it to a bar or line graph. This allows a certain amount of experimentation in what is going to look best. I like pie graphs, but there are times when they look out of place in the middle of a document.

MAKING MODIFICATIONS

Wordflair makes it easy to modify the document while you work on it. You can change the relative sizes of the different regions, as well as copy and move them. A region can become a "background" region and wrap around the others. For instance, you could have the text in the background fit around the sides and bottom of a graph or calculation. You could then change the size of the graph and the text would flow to fit the change.

It's easier to think of Wordflair as a desktop publishing program when making changes. You can create a grid and have the different regions line up with certain parts of the grid.

A grid helps give a visual sense to the document, especially if you're trying to make it more eye-catching.

DID I MENTION THE DATABASE?

Yes, Wordflair has a database feature. You can create records that you can merge with the document. You could have a list of names and addresses that would be read into the document each time you printed it. Also, Wordflair would make changes in the document to adapt to the merged information.

BUY MORE RAM...

Wordflair's product information points out that it is good for short documents. If you're working on long, complex documents, you might run into memory problems. I have an Atari 1040 ST with only 1Mb of memory. If I had a Mega 2 or 4, it might have been a little more flexible. As it was, I often ran into limitations of how many files I could have open.

SUMMARY

I like my other word processors, but if I ever need to knock out a short and impressive paper, Wordflair's what I'll use. It has an excellent manual and good tutorials, and I was able to get a good grasp of the program quickly. ■

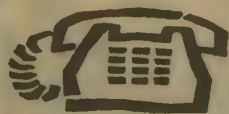
If you want to put together forms, specialized letters, technical papers, or newsletters, Wordflair is ideal; it lets you create documents that combine text, graphics, calculations, and data.



Copyright © 1990 by David Hawkins. All rights reserved. David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco. Both monitors, an Okimate 20 color printer, and disks are all over the room.



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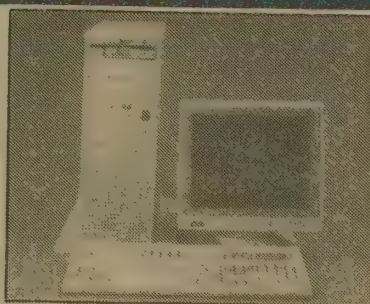
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1:1 HD/FD CONTROLLER
2 SERIAL/1 PARALLEL/1 GAME
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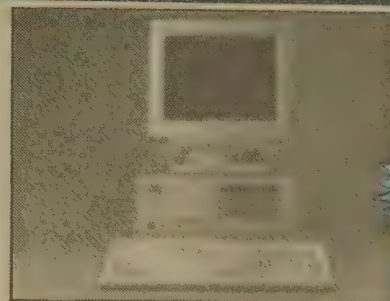
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VICTS 286/16

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ENHANCED 101 KEYBOARD
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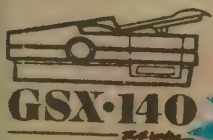
INTEL 80286/12 MHz CPU
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1.2 MB FLOPPY DISK DRIVE
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STANDARD AT CASE
2 SERIAL/1 PARALLEL/1 GAME
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WEST/DIG 40 MB IDE	300
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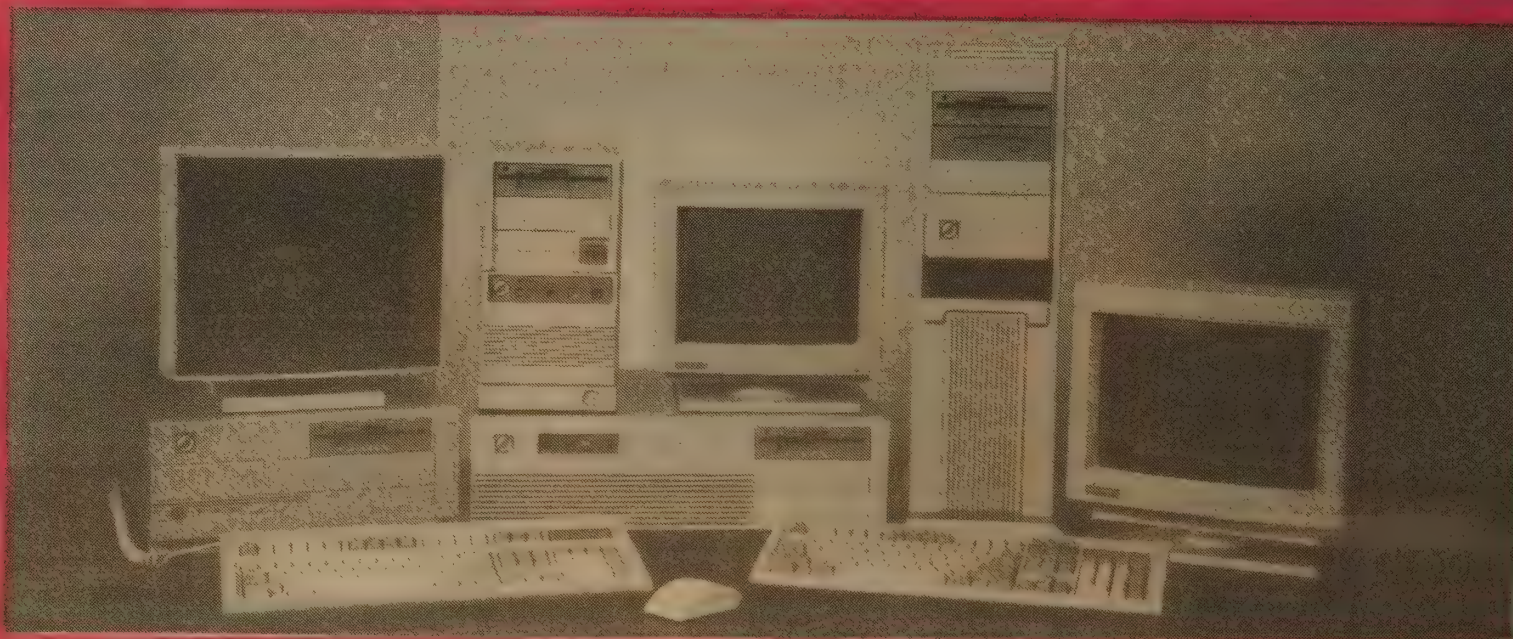
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- . High resolution **monochrome** graphics card with parallel printer port.
- . High resolution **monochrome** graphics monitor.

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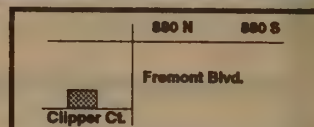
Precision 386SX

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- . 1MB DRAM memory included.
- . Small foot-print AT case w/ 200W power supply.
- . RLL (Run Length Limited) dual hard/floppy controller.
- . 1.2MB high density floppy drive & **66MB** (24ms) RLL hard disk drive.
- . AT I/O card (2 serial, 1 parallel, 1 game ports.)
- . High quality mechanical keyswitch, tactile click 101 key keyboard.
- . High resolution **VGA** 16 bit graphics card 256KB graphics buffer.
- . High resolution 14" **VGA** graphics monitor.

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Precision 486-25

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- Intel 486-25 CPU Ver. B6 with built-in math coprocessor.
- Internal 8KB cache memory upgradable to 128KB & **4MB** DRAM on board.
- Solid built Upright case w/ 250W power supply.
- 1:1 interleaving MFM dual hard/floppy controller.
- 1.2MB high density floppy drive (1.2MB/360KB compatible.)
- AT I/O card (2 serial, 1 parallel, 1 game ports.)
- High quality mechanical keyswitch, tactile click 101 key keyboard.
- High resolution **Super VGA** graphics card with 1024X768 resolution.
- High resolution 14" **VGA** 1024X768 graphics monitor.

3075

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Precision 386-33

- Highest performance true zero wait state running at 33Mhz (Landmark = 55.0Mhz.)
- Two way set associative 64KB cache memory & 1MB DRAM memory included.
- Solid built Upright case w/ 250W power supply.
- IDE (Integrated/Embedded) dual hard/floppy controller.
- 1.2MB high density floppy drive (1.2MB/360KB compatible.)
- **100MB** (24ms) IDE hard disk drive.
- AT I/O card (2 serial, 1 parallel, 1 game ports.)
- High quality mechanical keyswitch, tactile click 101 key keyboard.
- High resolution **VGA** 16 bit graphics card 256KB graphics buffer.
- High resolution 14" **VGA** graphics monitor.

2295

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Precision 386-25

- Highest performance true zero wait state running at 25Mhz (Landmark = 36.0Mhz.)
- 1MB DRAM memory included.
- Conventional Standard AT case w/ 230W power supply.
- IDE (Integrated/Embedded) dual hard/floppy controller.
- 1.2MB high density floppy drive (1.2MB/360KB compatible.)
- **80MB** (24ms) IDE hard disk drive.
- AT I/O card (2 serial, 1 parallel, 1 game ports.)
- High quality mechanical keyswitch, tactile click 101 key keyboard.
- High resolution **VGA** 16 bit graphics card 256KB graphics buffer.
- High resolution 14" **VGA** graphics monitor.

1625

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RESOURCES

Calendar Of Events

SEPTEMBER

September 29 Computer Show & Sale. Oakland. Computer Swap. Call: 1-800-433-7469.

OCTOBER

October 1 Director Part 1 Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 1 MS-DOS For CAD, Level 1 Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

October 1-2 dBASE III Class. Pleasanton. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 2 Defining And Achieving Quality Publications Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 2 Intro To WordPerfect Class. San Jose. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 2 SAMNA IV Class. Pleasanton. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 2-5 1990 Seybold Computer Publishing Conference & Expo: The Evolving Process Of Communication. San Jose. Seybold Seminars. Call: (213)457-5850.

October 2-5 Basic AutoCAD Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

October 2-5 SQL: Hands-on Workshop. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

October 3 Harvard Graphics Class. San Francisco. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 3 Windows 3.0 And Multimedia Seminar. Emeryville. The HyperMedia Group. Call: (415)285-8650.

October 3 Word I Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 3-5 UNIX System Basics Class. Pleasanton. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 4 Advantages Of Display List Processing Seminar. Sausalito. MarinACAD User Group. Call: Gigi Bollinger-Himes, (415)491-4722.

October 4 ISDN: An Intro To Services And Networks Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 4 Mathematica In The Classroom Lecture. San Francisco. USF. Call: (415)666-6530.

October 4 PageMaker I Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 4-6 "The Next Wave" In Newspaper Design Convention. San Francisco. Society in Newspaper Design. Call: (415)777-7968.

October 5 Using Presentation Visuals In Training Workshop. Techmart. UC Extension. Call: (408)562-5711.

October 6 Basic Mac Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 6 Building A Clone From Scratch Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

October 6 Computer Show & Sale. Santa Clara. Computer Swap. Call: 1-800-433-7469.

October 8 Artificial Intelligence Assoc. Meeting. Mt. View. Artificial Intelligence Assoc. Call: Rita Zokaei, (415)574-8225.

October 8 DeltaGraph Charts Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 8 MS-DOS For CAD, Level 2 Class. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

October 8-12 Interop '90 Expo. San Jose. Interop, Inc. Call: 1-800-800-INTEROP, ext. 200.

October 9 Education From Home On Your PC Seminar. Santa Clara. Women's Computer Society. Call: Tanya Halepota, (415)948-4500.

October 9 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Co., CPA. Call: Beth, (415)864-6770.

October 9 HyperCard I Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 9 The Business Of Learning Presentation. Cupertino. IICS. Call: (408)866-7941.

October 9-11 3rd Annual Multimedia Expo. San Francisco. American Expositions, Inc. Call: (212)226-4141.

October 9-12 Microprocessor Software, Hardware And Interfacing: Hands-on Intro Class. San Francisco. Integrated Computer

continued on page 212

OCTOBER 20, 1990

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Desktop color prepress has come of age. Prepress Solutions III brings together leaders in the manufacture and use of desktop prepress solutions. In presentations and workshops participants will learn how existing desktop technology can offer professional quality and cost savings. Contact: Desktop World, Inc., 2512 Ninth St., Suite 3, Berkeley, CA 94710. (415)549-0678.

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80386-16SX	370
80386-20 C & T Chip Set	635
80386-25 C & T Chip Set	675
80386-25 w/64K Cache	950

HARD & FLOPPY DRIVES

Teac 55 BR 1/2 Ht 360K	\$69
Fujitsu 1/2 Ht 360K	.62
Teac 1.2 Meg	.82
Teac 3 1/2" 720K	.79
Teac 3 1/2" 1.44 Meg	.89
Seagate 44 MB IDE w/Controller	325
Seagate 3 1/2" 80 MB 15 ms	650
20 Meg w/Controller	\$249
30 Meg w/Controller	269
Seagate 40 Meg 28ms	339
Floppy Controller	.29
XT 1.2 Meg Floppy Controller	54

ADD-ON CARDS

150 Watt P.S.	\$59
Clock Card	29
Serial Card	34
Multi I/O	49
MGP DFI w/Color Emulator	49
CGA Card w/Printer Adapter	55
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No Slot Clock	39
Hard Drive Controller XT	59
RLL Controller For HD XT	65
Max Flight Yoke	75
AST 6 Pack Plus w/384K	195
Genoa 6300 VGA w/512K	195

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EGA 640x350	349
Samsung Gray Scale 640x480	155
CTX VGA Multiscan 1024x768	459
Voltron 14" Paper White	109
Relisys VGA Multiscan 800x600	429
Sony VGA CPD 1302	650

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Star 2400 for MAC w/software & cable	\$119
2400 Baud Internal	129
2400 Baud External	139
1200 Baud Internal	65
1200 Baud External	79
Dyna Link Pocket Modem 2400	139
Smart Connect 2400 Int	99
Emerson 2400 Baud Ext.	99

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IMSI Mouse w/Pipe Dream	
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Genius Mouse 6000 w/Dr. Halo	55
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Pacific Mac Page (For LaserJet II)	379
Pacific Mac Page (For IIP, IID, III)	399

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2 Meg Upgrade For Laser Jet II	219
4 Meg Upgrade For Laser Jet II	379
1 Meg Upgrade For Laser Jet IIP	179
2 Meg Upgrade For Laser Jet IIP	259

EPSON

LX810	\$195
FX1050	439
LQ510	335
LQ850	519
LQ950	569
LQ1050	719
LQ2550	919

PANASONIC

KX1180	\$199
KX1124	319
KX1624	419

CANON

LBP-8 Mach III Laser Printer	\$1475
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APPLE COMPATIBLE PRODUCTS

800K Mac Drive	\$175
1/2 Ht Apple Compt Drive	89
IIc 1/2 Ht Compatible	95
II + 80 Column	54
Disk Controller	42
Ile 80 Column w/64K	44
Parallel Interface	40
Graphics Parallel	52
16K RAM Card	34.95
Super Serial Card	65
Ile 1 Meg RAM Board w/256K	119
Super Save Fan II, II +, Ile	25
Numeric Key Pad Ile	29
No Slot Clock	39
Max Flight Yoke Ile,c,gs	75
RF Modulators II, +, e	12
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V-7 VRAM 512K	\$377
V-7 1024i 512K	\$222
GENOA 6400 - 512K	\$188
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LOGITEC BUS MOUSE	\$ 72
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Calendar Of Events *continued from page 206*

Systems. Call: John Valenti, 1-800-421-8166.

October 10 DOS Essentials Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 10 Intro To LANs: A Hands-on Workshop. Techmart. UC Extension. Call: (408)562-5711.

October 10 MacDraw Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 10 Newsletter Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 10 POS For Retail Business Seminar. Fremont. Call: Victoria, (415)226-0881.

October 10 Project Management Comparison Seminar. San Francisco. 800-Software. Call: 1-800-888-4880.

October 10 Real Estate Management With IBM's Platinum Series: Computer Seminar. San Francisco. Howard M. Haberman Associates, Inc. Call: (415)641-0850.

October 10-11 Microprocessor Forum. San Francisco. Microprocessor Report. Call: 1-800-527-0288.

October 11 Networking Possibilities At USF

Lecture. San Francisco. USF. Call: (415)666-6530.

October 11-12 Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

October 12 Computer Network Education Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 12 Freelance Plus Class. San Jose. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 13 Building A Clone From Scratch Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

October 13 Computer Show & Sale. Vallejo. East-West Computer Shows. Call: (415)388-8893.

October 13 Computer Show & Sale. Santa Clara. Computer Swap. Call: 1-800-433-7469.

October 13 Computer Mart. Cupertino. De Anza College. Call: (408)864-8581.

October 13 Graphics Class. San Francisco. Computer Alliance. Call: (415)771-7133.

October 14 Computer Show & Sale. Hayward. East-West Computer Shows. Call: (415)388-8893.

October 15 Informix SQL Class. Pleasanton. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 15 Lotus Magellan Demo. San Francisco. San Francisco PC Users Group. Call: Lloyd Cribbs, (415)751-5219.

October 15 Microsoft Word Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 16 Fundamentals Of X.25 Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 16 Windows Class. Pleasanton. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 16 Word For Windows Class. San Francisco. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 16 WordPerfect For The Legal Pro-

fession Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 16-November 2 Hands-on UNIX Systems And Applications Programming In C Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

October 17 FreeHand Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 17 The Basics Of Desktop Publishing Seminar. Oakland. Padgett-Thompson. Call: 1-800-255-4141 or (913)451-2900.

October 17 The Software Dealer Channel Of The Future Seminar. Palo Alto. SEF. Call: Barbara Cass. (415)854-7219.

October 17 Topic Document Search And Retrieval Seminar. Techmart. Verity. Call: (415)960-7600.

October 18 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

October 18 Microsoft Excel Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 18 Microsoft Word Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 18 The Basics Of Desktop Publishing Seminar. San Francisco. Padgett-Thompson. Call: 1-800-255-4141 or (913)451-2900.

October 18-20 Computer-Using Educators Conference. Santa Clara. CUE, Inc. Call: (408)727-5156.

October 19 Intro To Novell NetWare Lecture. Techmart. UC Extension. Call: (408)562-5711.

October 19 The Basics Of Desktop Publishing Seminar. San Jose. Padgett-Thompson. Call: 1-800-255-4141 or (913)451-2900.

October 20 Desktop Color Pre-Press Lecture. Techmart. Desktop World, Inc. Call: (415)549-0678.

October 20 Excel Class. San Francisco. Computer Alliance. Call: (415)771-7133.

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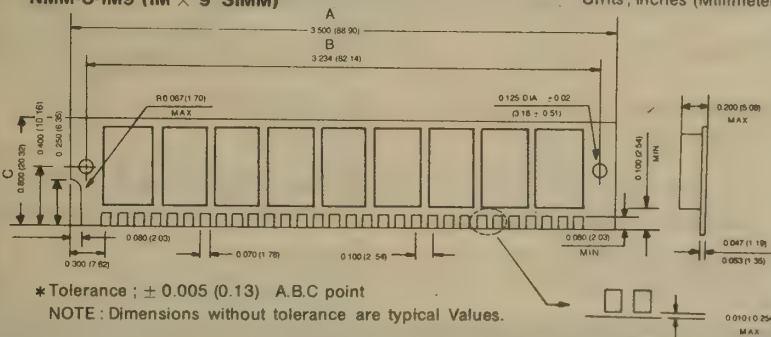
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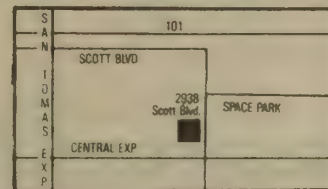
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Calendar Of Events *continued*

October 20 IBM PC Clone Troubleshooting And Repair Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

October 20 Prepress Solutions III Conference. Santa Clara. Desktop World, Inc. Call: (415)549-0678.

October 20 Sales Clinics For Consultants. Oakland. Independent Computer Consultants Assoc. Call: (415)339-8541.

October 20 Troubleshooting A Novell Network Class. Oakland. DataNet. Call: 1-800-879-4181.

October 22 Color Studio Part 1 Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 22 HyperCard Scripting Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 22 IBM-SmartWare II Ideas Lec-

ture. Techmart. Infotec Training Institute. Call: (408)562-6272.

October 22 Microsoft Excel Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 22-24 Electronic Messaging '90: Beyond Interpersonal Correspondence Conference. San Francisco. Electronic Mail Association. Call: (703)522-7111.

October 23 Lotus 1-2-3 v3.1 Presentation. San Francisco. San Francisco Business Computers. Call: (415)788-5338.

October 23 PageMaker Seminar. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 23-25 Data Base: A Manager's Guide Seminar. San Francisco. Technology Transfer Institute. Call: (213)394-8305.

October 23-26 Visualization '90 Confer-

ence. San Francisco. IEEE. Call: Dr. Stephen Levine, (508)967-0798.

October 23-December 20 Advanced Programming In dBASE III+/IV, Clipper And FoxPro Class. Berkeley. Vista College. Call: (415)841-8431.

October 24 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Co., CPA. Call: Beth, (415)864-6770.

October 24 Interchange '90 User Conference. Santa Clara. cc:Mail. Call: 1-800-448-2500.

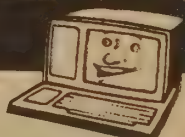
October 24 Intro To PC DOS Class. Oakland. DataNet. Call: 1-800-879-4181.

October 24 Paradox Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 25 Supply And Quality Analysis Of

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Centennial Hall
- Sacramento - Sat. Oct. 20
Cai Expo
- Santa Rosa - Sun. Oct. 21
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- Oakland - Sat. Oct. 27
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Panasonic KX-P1180 W/Cable 169
Panasonic KX-P1190 W/Cable 229
Panasonic KX-P1124W/Cable.. 289
Panasonic KX-P1624 W/Cable 395
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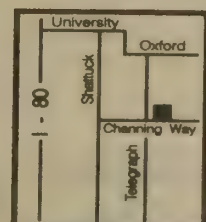
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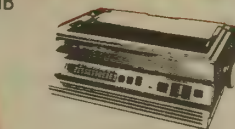
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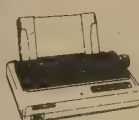


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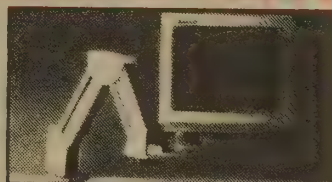
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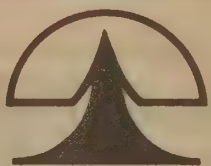
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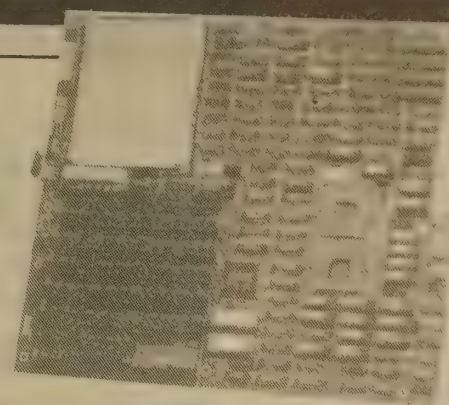
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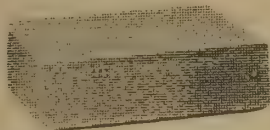
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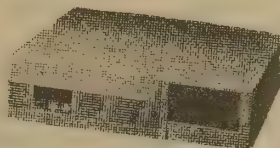
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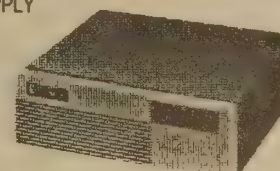
IW-A107 (AT CASE)

- AT, BABY AT MAIN BOARD
- 5 X 5.25" HALF HEIGHT
- 16.73" X 21.5" X 6.26"
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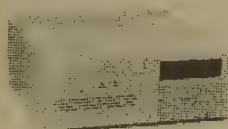
IW-D13 (BABY AT CASE)

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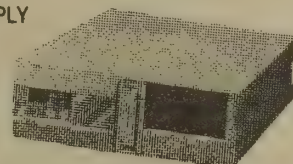
IW-B103 (BABY AT CASE)

- XT, BABY AT MAIN BOARD
- 3 X 5.25" FDD, 1 X 3.5" FDD, 1 X 3.5" HDD
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- SLIDE IN TYPE
- 1 PC/CARTON/20.0 LBS.
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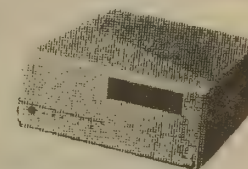
IW-B570 (BABY AT CASE)

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- 3 X 3.5" FDD, 1 X 3.5" FDD, 1 X 3.5" HDD
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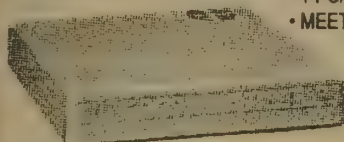
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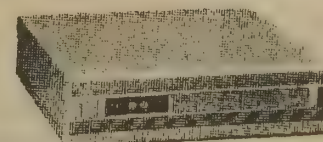
IW-E13 (SLIM CASE)

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Integrated Circuits Seminar. San Jose. Se-crest Research. Call: (415)851-8142.

October 25–November 15 DOS In Depth Class. San Francisco. San Francisco Community College. Call: (415)267-6500.

October 25–November 15 PageMaker 3 Class. San Francisco. San Francisco Community College. Call: (415)267-6500.

October 26 NetWare 286 System Administrator Class. Oakland. DataNet. Call: 1-800-879-4181.

October 26 Quark XPress Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 26 Using MS-DOS Class. San Francisco. AT&T Professional Development Center. Call: Chris Maltzman, (415)978-2380.

October 26 Word For Windows Class. Pleasanton. AT&T Professional Development

Center. Call: Chris Maltzman, (415)978-2380.

October 27 Building A Clone From Scratch Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

October 27 Laptop & Communication Software Technical Forum. San Jose. JDR Microdevices. Call: Dan Urioste, (408)947-8881.

October 27 PC Repair Class. Oakland. DataNet. Call: 1-800-879-4181.

October 30 Accounting And Manufacturing Seminar. Fremont. Call: Victoria, (415)226-0881.

October 30 FileMaker Professional Class. San Francisco. Abacus, Inc. Call: Deborah Starnes, (415)759-9508.

October 31 dBASE IV Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

October 31–November 2 MacroMind

Developer's Conference. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

October 31–November 2 UNIX Expo. New York. National Expositions Company, Inc. Call: Heidi Dethloff, (312)332-4650.

NOVEMBER

November 1 Landscape Architecture And Land Planning With AutoCAD Seminar. San Rafael. Marin ACAD User Group. Call: Gigi Bollinger-Himes, (415)491-4722.

November 1 PC Fundamentals Class. Walnut Creek. Computer Education Center. Call: (415)937-2566.

November 3 Computer Show & Sale. San Jose. Computer Swap. Call: 1-800-433-7469.

November 3 IBM PC Clone Troubleshooting And Repair Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

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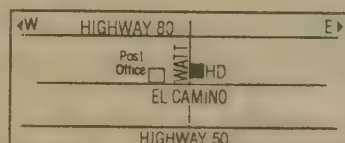
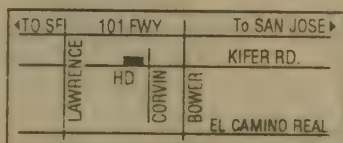
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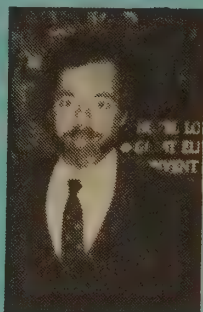
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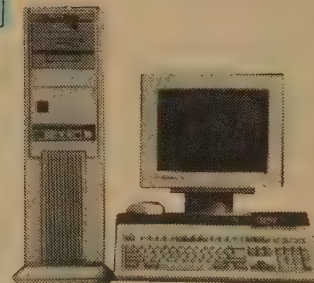
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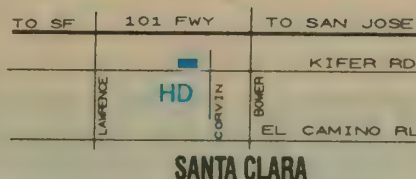
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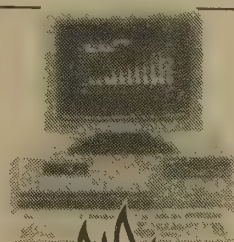
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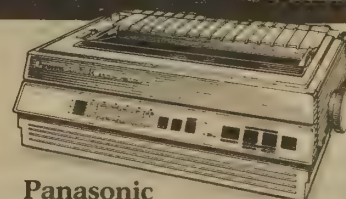
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November 5 The Basics Of WordPerfect Seminar. Sacramento. Dun & Bradstreet. Call: (212)312-6880.

November 6 Automating Your Business Accounting System On A Macintosh Seminar. San Francisco. J.C. Lukrich & Co., CPA. Call: Beth, (415)864-6670.

November 6 The Basics Of WordPerfect Seminar. Concord. Dun & Bradstreet. Call: (212)312-6880.

November 6-9 Real-Time Structured Analysis And Design Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

November 7 The Basics Of WordPerfect Seminar. San Francisco. Dun & Bradstreet. Call: (212)312-6880.

November 8 Scalable Computing On A Hypercube Multiprocessor Lecture. San Francisco. USF. Call: (415)666-6530.

November 8 The Basics Of WordPerfect Seminar. San Jose. Dun & Bradstreet. Call: (212)312-6880.

November 10 Building A Clone From Scratch Class. Oakland. Excel Micro Solutions. Call: (415)836-2040.

November 10 Computer Mart. Cupertino. De Anza College. Call: (408)864-8581.

November 11 Computer Show. San Francisco Fort Mason Shows. Call: (916)725-0228.

November 13-14 Train The Trainer Course. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

November 15 Accounting Systems Seminar. Oakland. David A. Simon, CPA. Call: (415)893-5753.

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November 15 Chasing A Promise: 25 Years Of Computers And Instruction Lecture. San Francisco. USF. Call: (415)666-6530.

November 15-16 Interactive Multimedia Seminar. San Francisco. MacroMind. Call: (415)442-0200, ext. 225 or 222.

November 28-29 On Emerging Software Technologies Conference. San Francisco. Digital Consulting, Inc. Call: (508)470-3880.

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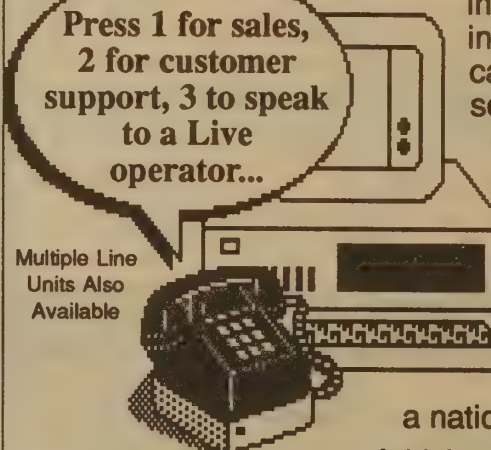
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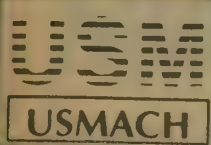
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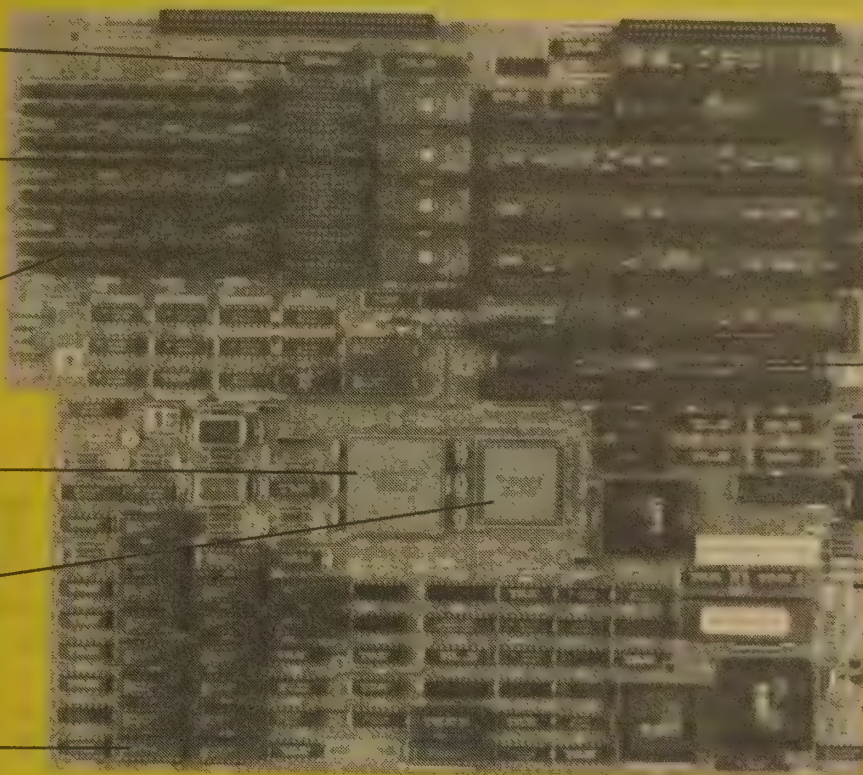
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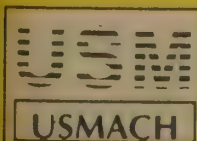
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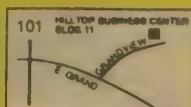
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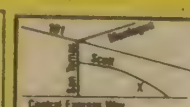
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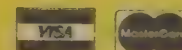
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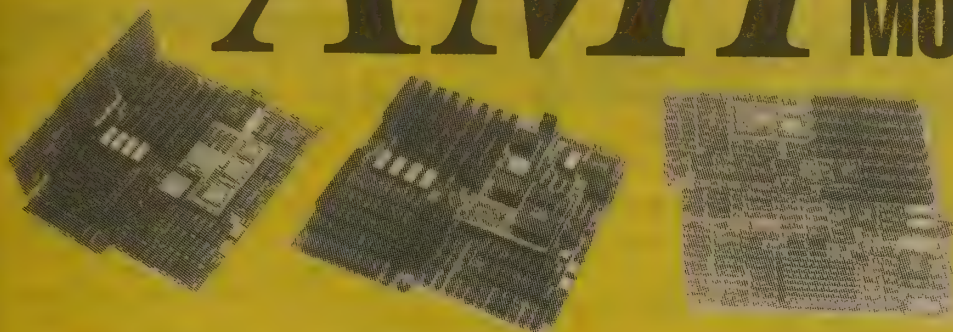
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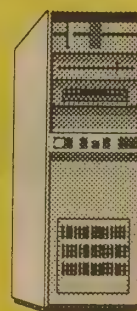
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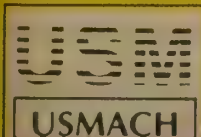
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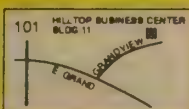
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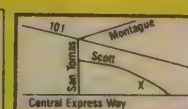
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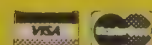
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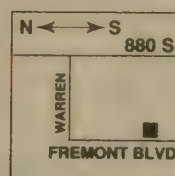
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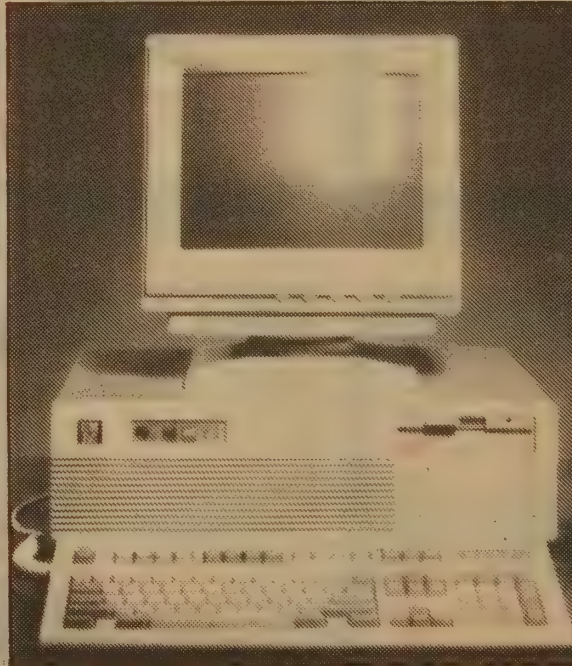
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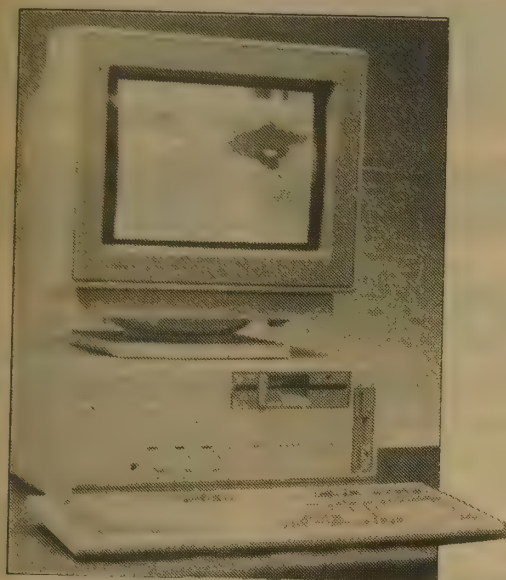
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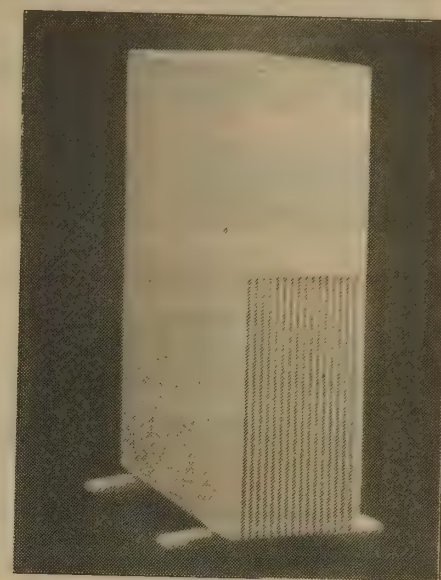
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MODEL	MEMORY	PART NUMBER	LIST PRICE	ATICO PRICE
IBM PS/2				
25	128K KIT	78X8955	\$ 50	\$ 37
30/286, 50, 60	512K KIT	30F5348	\$ 200	\$ 69
56SX	2MB KIT	30F5360	\$ 795	\$ 219
56SX	1MB MODULE	6450603	\$ 450	\$ 129
50Z, 56SX, 86SX	2MB MODULE	6450604	\$ 950	\$ 286
56SX, 66SX	4MB MODULE	34F2933	\$2,195	\$ 722
50, 50Z, 56SX, 66SX	2-8MB EXP BRD w/2MB	1497259	\$1,350	\$ 595
	2-8MB EXP BRD w/4MB	1497259+	\$2,040	\$ 938
	2-8MB EXP BRD w/6MB	1497259+	\$2,830	\$1,201
	2-8MB EXP BRD w/8MB	1497259+	\$3,620	\$1,483
70-E81, 70-061, 70-121	1MB MODULE	6450603	\$ 450	\$ 110
	2MB MODULE	6450604	\$ 950	\$ 286
			*6450605 Required	
70-A21, A61, B21, B61	1MB MODULE	6450603	\$ 450	\$ 110
	2MB MODULE	6450604	\$ 950	\$ 286
	4MB MODULE	34F2933	\$ 950	\$ 286
			*6450605 Required	
70-All Models	2-8MB EXP BRD w/2MB	6450605	\$1,295	\$ 489
	2-8MB EXP BRD w/4MB	6450605+	\$2,890	\$ 888
80-All Models	2-8MB EXP BRD w/6MB	6450605+	\$4,185	\$1,147
	2-8MB EXP BRD w/8MB	6450605+	\$5,480	\$1,406
80-041	1MB BOARD	6450375	\$ 675	\$ 165
80-041, 071	2MB MODULE	6450372	\$1,295	\$ 499
80-A21, A31	4MB BOARD	6451080	\$1,895	\$ 778
80-All Models	1MB MODULE	6450603	\$ 450	\$ 129
	2MB MODULE	6450604	\$ 950	\$ 286
	4MB BOARD	6450379	\$ 950	\$ 429
	4MB MODULE	34F2933	\$2,195	\$ 722
			*6450605 Required	
PORTABLE P70	2MB MODULE	6450604	\$ 950	\$ 285
4019/E, LAMER, PRINTER	1MB MODULE	1039136	\$ 450	\$ 210
	2MB MODULE	1039137	\$ 850	\$ 347
	3.5MB MODULE	1038675	\$1,495	\$ 516

COMPAQ				
DESKPRO 286E	1MB MODULE	113131-001	\$ 450	\$ 164
	4MB MODULE	113132-001	\$1,950	\$ 465
DESKPRO 386/16	1MB KIT	108071-001	\$ 635	\$ 239
	4MB KIT	108072-001	\$2,550	\$1,248
	1-2MB EXP BRD w/1MB	108069-001	\$ 650	\$ 412
	4-8MB EXP BRD w/4MB	108070-001	\$2,550	CALL
DESKPRO 386S	1MB MODULE	113648-001	\$ 450	\$ 164
	1MB BOARD	113633-001	\$ 650	\$ 238
	4MB MODULE	112534-001	\$1,950	\$ 475
	4MB BOARD	113634-001	\$2,395	\$ 595
DESKPRO 386/20, 25	1MB MODULE	113131-001	\$ 450	\$ 164
	4MB MODULE	113132-001	\$1,950	\$ 465
DESKPRO 386/20E, 25E	1MB BOARD	113131-001	\$ 450	\$ 139
	4MB BOARD	113132-001	\$ 650	\$ 240
	4MB BOARD	113132-001	\$1,950	\$ 465
	4MB BOARD	113645-001	\$2,395	\$ 595
DESKPRO 386/33	2MB MODULE	115144-001	\$ 950	\$ 299
DESKPRO 486/25, SYSTEM PRO	2MB MODULE	115144-001	\$ 950	\$ 299
	5MB MODULE	116561-001	\$5,195	\$2,282
PORTABLE 386	1MB KIT	107651-001	\$ 650	\$ 259
	4MB BOARD	107653-001	\$2,395	\$ 985
	4MB EXT BOARD	107654-001	\$2,395	\$ 985
PORTABLE III	512K KIT	107331-001	\$ 269	\$ 49
	2MB KIT	107332-001	\$1,100	\$ 325
PORTABLE LTE	512K BOARD	117077-001	\$ 295	\$ 197
	1MB BOARD	117081-001	\$ 650	\$ 239
	2MB BOARD	117081-002	\$1,250	\$ 385
SLT286	1MB BOARD	110235-001	\$ 650	\$ 295

APPLE MAC				
PLUS SE, SE30, II	1MB KIT	MO218	\$ 250	\$ 99
	2MB KIT	MO219	\$ 450	\$ 140
	4MB KIT	MO2707	\$ 298	\$ 298
IIcx	4MB KIT	MO292LL-A	\$ 950	\$ 296
	4MB MODULE		\$6,995	\$2,685
IIcx	1MB KIT	MO218	\$ 250	\$ 76
	2MB KIT	MO219	\$ 450	\$ 140
	4MB KIT	MO2707	\$ 298	\$ 298
	4MB MODULE		\$ 546	\$ 546
IIfx	4MB KIT	MO376LL-A	\$ 950	\$ 548
	16MB KIT		\$6,995	\$2,685
PORTABLE	1MB KIT	MO248	\$ 630	\$ 434
	4MB MODULE		\$ 299	\$ 299
LASERWRITER II/NTX	1MB EXP KIT	M6005	\$ 450	\$ 268
	4MB EXP KIT	M6006	\$ 950	\$ 536

AST RESEARCH				
BRAVO 286	128K KIT	500510-011	\$ 50	\$ 42
	512K KIT	500510-010	\$ 135	\$ 65
	2MB KIT	500510-002	\$ 345	\$ 174
BRAVO 386SX	512K KIT	500510-010	\$ 135	\$ 65
	2MB KIT	500510-002	\$ 345	\$ 174
PREMIUM 286 ADVANCED	1MB KIT	500510-007	\$ 260	\$ 118
	2MB KIT	500510-002	\$ 345	\$ 174
PREMIUM WS286/WS386SX	512K KIT	500510-010	\$ 135	\$ 65
	2MB KIT	500510-002	\$ 345	\$ 174
PREMIUM 386SX/16, 386/25	1MB MODULE	500718-001	\$ 195	\$ 103
	1-16MB EXP BOARD	500722-004	\$ 562	\$ 562

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MODEL	MEMORY	PART NUMBER	LIST PRICE	ATICO PRICE
AST RESEARCH				
PREMIUM 386/33	1MB MODULE	500718-002	\$ 195	\$ 139
	1-16MB EXP BOARD	500722-004	\$ 562	\$ 562
PREMIUM 386/16, 386C	1MB KIT	500510-007	\$ 260	\$ 125
	4MB KIT	500510-008	\$ 675	\$ 335
PREMIUM 486	2MB MODULE	500718-004	\$ 850	\$ 323
PREMIUM 486/25, 25E, 25T, 25TE, 33	1MB MODULE	500718-002	\$ 195	\$ 139
	1-16MB EXP BOARD	500722-004	\$ 562	\$ 562
AT&T (WGS SYSTEM)				
6286	2MB UPGRADE	37727	\$1,195	\$ 299
6386, 6386E	1MB UPGRADE	37714	\$ 750	\$ 199
	4MB UPGRADE	37716	\$2,795	\$ 550
6386/SX, 6386/25&33	2MB UPGRADE	37336	\$1,195	\$ 290

EPSON				
EQUITY IIc, 386/20	1MB KIT	A808091	\$ 450	\$ 192
	1MB KIT	A808231	\$ 450	\$ 222
	2MB KIT	A808101	\$ 995	\$ 321
386SX	1MB KIT	A808231	\$ 450	\$ 222
	2MB KIT	A808101	\$ 995	\$ 321

HP VECTRA SYSTEM				
VECTRA QS/16S	1MB KIT	D1540A	\$ 595	\$ 220
	2MB KIT	D1354A	\$1,195	\$ 295
	4MB KIT	D1642A	\$2,495	\$ 588
VECTRA ES/12PC	2MB KIT	D1354A	\$1,195	\$ 295
VECTRA QS/20S, RS/25PC	1MB KIT	D1640A	\$ 595	\$ 295
	4MB KIT	D1642A	\$2,495	\$ 583
VECTRA 486PC	2MB KIT	Two D2150A	\$ 595	\$ 325
	8MB KIT	Two D2151A	\$2,495	\$1,945
	16MB KIT			\$3,993

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MODEL	MEMORY	PART NUMBER	LIST PRICE	ATICO PRICE
HP LASER PRINTER				
LASER JET II, IIi	OMB BOARD			\$ 99
	1MB BOARD	H33443B	\$ 485	\$ 148
	2MB BOARD	H33444B	\$ 775	\$ 218
	4MB BOARD	H33445B	\$1,450	\$ 378
LASER JET IIP, III	OMB BOARD			\$ 117
	1MB BOARD	H33474B	\$ 485	\$ 188
	2MB BOARD	H33475B	\$ 890	\$ 286
	3MB BOARD	H33476B		\$ 399
	4MB BOARD	H33477B		\$ 438
NEC				
POWER MATE 386SX	4-8MB EXP BRD		\$2,295	\$ 842
TOSHIBA PORTABLE/LAPTOP				
T1000SE	1MB CARD	PC14-PA8311U		\$ 419
	2MB CARD	PC14-PA8312U	\$1,199	\$ 888
T1600	2MB BOARD	PC8-PA8302U	\$1,190	\$ 280
T3100	2MB KIT		\$1,190	\$ 699
T3100E	512K KIT	PC9-PA8340U	\$ 350	\$ 178
	2MB KIT	PC9-PA8341U	\$1,190	\$ 286
T3100SX	2MB BOARD	PC15-PA8308U	\$ 950	\$ 419
	4MB BOARD			\$1,088
T3200	2MB BOARD	PC6-PA7137U	\$1,590	\$ 492
T3200SX	2MB KIT	PC12-PA8307U	\$ 990	\$ 286
	4MB KIT			\$ 950
T5100	2MB BOARD	PC7-PA8301U	\$1,190	\$ 280
T5200/T8500	2MB KIT	PC10-PA8304U	\$ 950	\$ 286

ZENITH				
Z248	2MB MODULE	Z805-1	\$1,299	\$ 389
Z386/20, 25	1MB MODULE	ZA3800-ME	\$ 899	\$ 146
	2MB MODULE	ZA3800-MG	\$1,299	\$ 264
	4MB KIT	ZA3800-MK	\$2,695	\$ 684
SUPERSPORT 286	1MB KIT	ZA180-66		\$ 368
	1MB BOARD			\$ 288
	1MB EXP CARD	7PC-16AC		\$ 215
	4MB KIT	ZA180-67		\$1,119
SUPERSPORT 386SX	2MB BOARD	ZA180-86		\$ 532
TURBOSPORT 386	1MB KIT	ZA3034-ME		\$ 369

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MODEL	MEMORY	PART NUMBER	LIST PRICE	ATICO PRICE
APOLLO				
DN3000	2MB BOARD		\$2,000	\$ 995
DN3500, DN4000	4MB BOARD		\$3,000	\$1,680
DN4500	8MB BOARD		\$6,500	\$2,886
DATA GENERAL				
AVION SERIES	4MB BOARD		\$3,000	\$1,740
DEC				
DECStation 2100, DECStation 3100	4MB KIT	MS01-AA	\$2,500	\$ 899
VAXStation 3100, MicroVAX 3100	8MB BOARD	MS42-KA	\$3,995	\$1,567
	12MB ADD-ON	MS42-BA	\$5,995	\$2,197
	12MB EXP BRD		\$5,995	\$2,530
	16MB BOARD	MS42-CA	\$7,950	\$2,985
VT100 TERM, VT100 BOARD	1MB BOARD	VX10X-MA	\$ 395	\$ 315
	1MB MODULE	VX10X-MD	\$ 395	\$ 299
HP WORKSTATION				
HP-9000/200, 300	2MB BOARD		\$2,200	\$1,080
	4MB BOARD		\$3,000	\$1,284
HP-9000/340	4MB BOARD		\$3,500	\$1,950

SILICON GRAPHICS (IRIS SERIES)				
PERSONAL 40/20/25	4MB KIT	H4C04A	\$1,650	\$ 499
	16MB KIT	H4C04B	\$7,900	\$2,643
PROFESSIONAL 40/40/50/70/80	4MB KIT	H4C04B	\$1,650	\$ 499
CS/12 TURBO12/16	16MB KIT	H4C04B	\$7,900	\$2,643
POWER SERIES 40/120/220/240/280	8MB KIT	H4C08X	\$3,900	\$1,906
SUN				
3/60, 3/80, 4/80, SPARC 1	4MB OPTION	X104C-G, -H	\$1,895	\$ 625
4/110	16MB OPTION	X116D	\$7,700	\$2,386
SPARC 4/60, 4/330, 4/370	16MB OPTION	X116H	\$5,600	\$2,783
4/330, 4/370	8MB OPTION	X108E	\$7,700	\$1,237

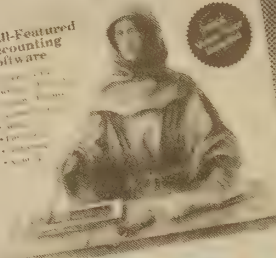
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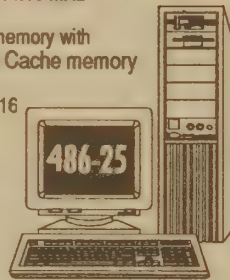
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MICRO-L 486-25 Cache \$2,995 Network Server

- Intel 80486-25MHz CPU, Lndmk: 114.10 MHz
- CMOS Set-up, MIPS: 11.104
- CPU Built-in 1st level 8KB Cache memory with 2nd level 64k expands to 256K Cache memory
- Support external Weitek 4167
- 4MB RAM onboard with maximum 16
- Eight 16-bit slots
- AMI 486 BIOS w/Shadow RAM
- 1.2MB & 1.44MB FDs (TEAC)
- 2 serial, 1 parallel, 1 game ports
- 1:1 interleave ESDI controller with 32k Cache
- Keytronic 101 keyboard (USA)
- Tower case with 230W P/S



Monitor & Video Card	STANDARD SYSTEM W/MONITOR & VIDEO CARD			
	No Video & Monitor	14" VGA 640 x 480	14" VGA Multiscan 800 x 600	15" Super Multiscan
Basic System -	2,995	3,380	3,525	3,765
WITH HARD DRIVE				
158MB, 14ms - ESDI	3,875	4,260	4,405	4,645
338MB, 16ms - ESDI	4,360	4,745	4,890	5,130
768MB, 16ms - ESDI	4,860	5,245	5,390	5,630
*Maxtor Drive *Relisys Monitor				

MICRO-L 386-33/Cache \$1,645 Network Server

- Genuine 32-bit Intel 386-33MHz CPU, Lndmk: 58.7MHz
- 33MHz Intel 82385 Cache Controller w/64k memory
- 4MB RAM on-board with maximum 16MB
- 80387 Weitek WTL 3167 co-processor socket
- True OS/2, XENIX, MS DOS, and Novell compatible
- 8 exp. slots (1-32, 6-16, 1-8 bit)
- 1:1 interleave controller or IDE
- Phoenix BIOS
- 1.2 MB & 1.44MB FDs (Teac)
- 2 serial, 1 parallel, 1 game port
- Keytronic 101 keyboard (USA)
- Tower case w/6 HDD and 230W Power Supply
- MS DOS 3.3 or 4.01 included



Monitor & Video Card	STANDARD SYSTEM W/MONITOR & VIDEO CARD			
	No Video & Monitor	14" VGA 640 x 480	14" Multiscan 800 x 600	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	1,645	2,030	2,175	2,310
WITH HARD DRIVE				
80MB, 19ms - IDE	2,125	2,510	2,655	2,790
100MB, 19ms - IDE	2,185	2,570	2,715	2,850
158MB, 14ms - ESDI	2,595	2,980	3,125	3,260
338MB, 16ms - ESDI	3,085	3,470	3,615	3,750
*Maxtor Drive *Relisys Monitor				

MICRO-L 386-25 Business System

\$980

- 80386-25MHz CPU, Lndmk: 28.0MHz
- True OS/2, XENIX, MS DOS, and Novell compatible
- 1MB RAM expandable to 8MB
- 80387 co-processor socket
- 1.2 MB floppy drive (Teac)
- 2HD/2FD IDE controller
- AMI BIOS, NEAT Chipset
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- Keytronic 101 keyboard (USA)
- 5-drive AT case with security lock, LED indicators, 230W P/S
- Tower Case add \$85

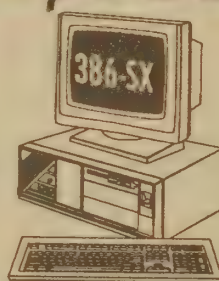


Monitor & Video Card	STANDARD SYSTEM W/MONITOR & VIDEO CARD			
	No Video & Monitor	14" VGA 640 x 480	14" Multiscan 800 x 600	HiRes VGA 1024 x 768 Seiko CM-1440
Basic System -	980	1,365	1,510	1,645
WITH HARD DRIVE				
40MB, 27ms - IDE	1,225	1,610	1,755	1,890
80MB, 19ms - IDE	1,460	1,845	1,990	2,125
100MB, 19ms - IDE	1,505	1,890	2,035	2,170
*Maxtor Drive *Relisys Monitor				

MICRO-L 386-SX Executive System

\$665

- 80386/SX-16 CPU runs 16MHz
- 80387 co-processor socket
- 1MB RAM expandable to 8MB
- 1.2 MB floppy drive (Teac)
- True OS/2, XENIX, MS DOS, and Novell compatible
- AMI BIOS, NEAT Chipset
- 1:1 interleave HD/FD IDE cntrlr
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- Keytronic 101 keybd (USA)
- Deluxe baby-AT case with 200W Power Supply

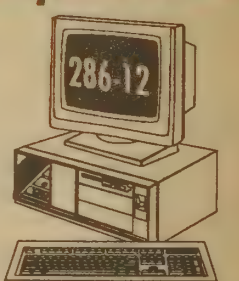


Monitor & Video Card	STANDARD SYSTEM W/MONITOR & VIDEO CARD			
	No Video & Monitor	12" VGA Mono	14" VGA 640 x 480	14" Multiscan 800 x 600
Basic System -	665	865	1,050	1,195
WITH HARD DRIVE				
40MB, 27ms - IDE	910	1,110	1,295	1,440
80MB, 19ms - IDE	1,145	1,345	1,530	1,675
100MB, 19ms - IDE	1,190	1,390	1,575	1,720

MICRO-L 286-12 Desktop System

\$415

- 80286-12.5MHz CPU
- 80287 co-processor socket
- 1MB RAM expandable to 4MB
- True OS/2, XENIX, MS DOS, and Novell compatible
- 1.2 MB floppy drive (Teac)
- AMI BIOS, VLSI
- 2HD/2FD IDE controller
- 8 expansion slots
- 2 serial, 1 parallel, 1 game port
- 101 Enhanced keyboard
- Deluxe baby-AT w/200W P/S
- 16MHz - Add \$83
- 20MHz - Add \$110



Monitor & Video Card	STANDARD SYSTEM W/MONITOR & VIDEO CARD			
	No Video & Monitor	12" Flat Mono 720 x 350	14" VGA 640 x 480 Relisys	14" VGA Multiscan Relisys
Basic System -	415	515	800	945
WITH HARD DRIVE				
40MB, 27ms - IDE	665	765	1,050	1,195
80MB, 19ms - IDE	895	995	1,280	1,425
100MB, 19ms - IDE	940	1,040	1,325	1,470

MOTHERBOARDS

486-25 EISA up to 64MB	\$3,195
486-25 AT w/64K up to 16MB	\$2,085
386-33 w/64K CACHE w/CPU	\$865
386-25 w/64K CACHE w/CPU	\$765
386-25 w/CPU	\$595
386-SX/16	\$310
286-16 NEAT	\$205
286-12 VLSI	\$105
XT 10MHz VIP	\$50
XT - 10MHz Complete System - Call Config.	\$275

PRINTERS

PANASONIC KX-P1180 9-pin	\$148
PANASONIC KX-P1124 24-pin	\$269
PANASONIC KX-P1624 24-pin	\$342
PANASONIC KX-P1695 24-pin	\$375
PANASONIC KX-P4450i 24-pin	\$1,275
CITIZEN GSX-140 24-pin	\$275
HP LASERJET MEM UPGRADES	
JetRam II, IID-1MB, 2MB, 4MB	\$120/155/250
JetRam IIP, IIP-1MB, 2MB, 4MB	\$125/160/255

HARD DRIVES

MAXTOR XT-4170E 158MB	\$825
MAXTOR XT-4380E 338MB	\$1,280
MAXTOR XT-8760E 768MB	\$1,750
CONNER CP-3044 40MB	\$310
CONNER CP-3184 80MB	\$480
CONNER CP-3104 100MB	\$495
CONNER CP-3204 200MB	\$780
WD IDE 40MB w/adaptor, cable	\$265

MONITORS

RELISYS VGA RE-9519	\$310
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RELISYS Multiscan RE-5155	\$400
RELISYS Super Multiscan RE-1520	\$580
RELISYS VGA Gry-Scl RE-9503	\$120
SEIKO VGA 1024X768 CM-1440	\$495
SEIKO VGA 1024X768 CM-1450	\$650
GENOA VGACard 6300 (256K)	\$118
GENOA VGA Card 6400 (512K)	\$135
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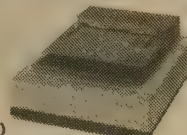
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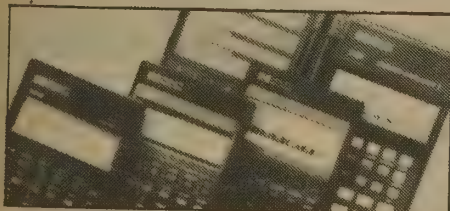
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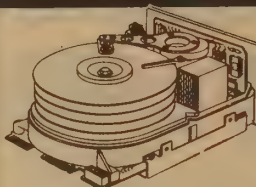
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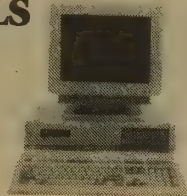
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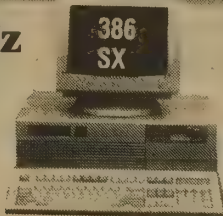
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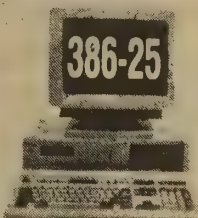
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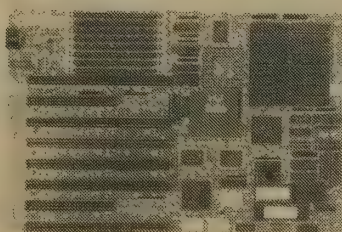
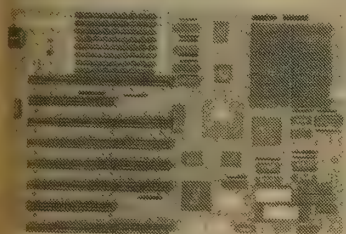


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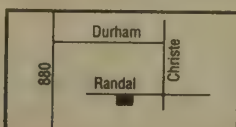
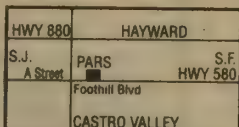
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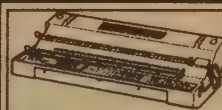
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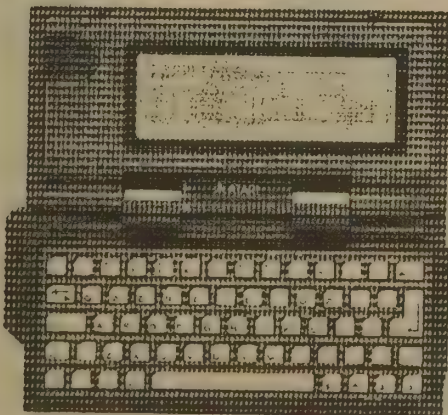
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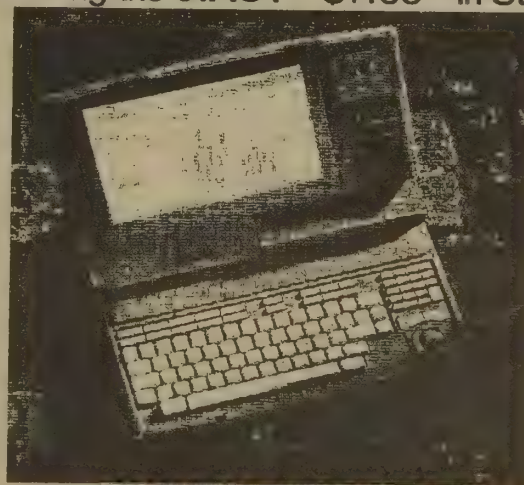
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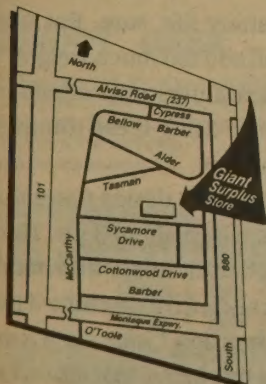
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An Ode To The Four Pound Computer Or How Long Will They Build The Clunkers?

BY JOHN C. DVORAK

When Sharp unveiled its 4.5 lb. 6220 laptop portable it signaled the beginning of the end for the 6, 9, 12 and 14 lb. clunkers. As someone who is forced to use these machines routinely, I have to urge anyone who is considering a portable laptop computer to not even consider any machine that weighs over 4.5 lbs.

Let's detail this prejudice. Over the years I have used most every style and type of portable, from the Toshiba 1000 to the Zenith SupersPort. I pretty much gave up on them all when the NEC Ultralite came out. Despite the fact that it has no floppy disk and despite the fact that I said in *PC Magazine* that a laptop should have a floppy disk and despite the fact that its keyboard sucks, I ended up using it and now it's the standard for me. It turns out that the most important thing about a laptop is not the keyboard or the floppy disk, but the weight.

The perfect weight is 4.5 lbs. An ounce more and the machine becomes a burden. I tried using the Compaq LTE. At 6 lbs., it was simply too big and too heavy. Hard to believe, but ask anyone who has

bickering within the company has failed to conclude that weight is as important as, say, processor speed.

This is an issue everywhere. One company argued with me until I was blue in the face saying that a 6 lb. 386SX would be a better machine than the 4.5 lb. 286-based machine because people want speed, not light weight.

This is based on the observation that 14.5 lb. 386SX portables have sold better than 12 lb. 8088 machines.

The fact is that people want speed *and* light weight. But lugging 6 lbs. of bulky deadweight around an airport for hours on end in an extra case can be a real nuisance. Speed be damned. There is nothing as rewarding as traveling light.

I feel sorry for the guys I see lugging those large cases with the huge laptops inside. It's a pathetic sight. Then they pull the thing out and it's horrible—a monster!

That's about the time you also notice that the floppy disk is never used. Everything is on the hard disk. Even when the machine has a floppy, when you get back to the office you'll find it easier to plug directly into the desktop and transfer files *en masse*, hard disk to hard disk. I suppose the floppy would come in handy if your machine crashed and you had to boot from a floppy. Reliability nowadays negates that need. My experience has been when a laptop acts up it dies altogether. The floppy doesn't help. With my LTE the floppy itself broke!

The last factor that has to be discussed is the battery. Much of the weight is because the battery pack weighs so much. The battery pack in an LTE weighs about as much as an Ultralite. The Ultralite uses the powerful but potentially explosive lithium battery. Put too many in a laptop and the FAA bans the laptop from airplanes. The more battery power the heavier the laptop.

Much of the juice is sucked up by the backlighting. The smallest palm-top Poqet Computer gets a hundred hours from a pair of batteries due to the fact that the screen is very small and not backlit.

While the number of hours of battery life is a selling point, the user only needs two hours. This is about all the computer-based work you can do on a coast-to-coast flight in my experience. The TI/Sharp 6220 and the Ultralite easily achieve this in normal use. Tests done by the folks at PC Labs give this class of machine one hour and 45 minutes battery life, but these tests have the machine running full bore calculations and disk access at full speed the whole time. In real use you can add at least a half hour to the results, sometimes more. It's more than enough time to do some real work.

If you're flying to Paris, you may want to bring an extra battery pack. Then again if you're flying to Paris you may not want to bring a computer at all.

It's nice to have four hours of battery life, sure. But unless the technology changes (not likely), it will add too much weight. Try and get used to a couple of hours and be pleasantly surprised when you get 2 1/2 hours. Most of the time is spent using these things in hotel rooms, where they are plugged in anyway.

So what's the future hold? Engineers who design these things tell me that the ultimate Ultralite should weigh about 3 lbs. That would include a small hard disk, a full-sized backlit screen and battery pack in an ultrathin case. But we may never see such a machine if the dopemanufacturers are convinced that users don't want such a machine. This is the message we send when we buy heavy machines. Let's stop now and demand a 4.5 lb. limit. ■

DVORAK'S LAST COLUMN

discovered the magic weight and they'll say the same thing. When a machine is the size and weight of the Ultralite it doesn't become an extra piece of luggage. It can be thrown in any suitcase or briefcase adding not much more weight than a pair of damp jeans.

Furthermore, the profile of machines such as this is slim. You can slip it out in an airplane, and when you have to put it away for a moment—say, while eating—it actually stows in the magazine pocket that hangs off the back of the seat in front of you (where the in-flight magazine and barf bag can be found).

If there is any drawback to this it's the possibility that you'll lose the computer.

Some people say that the lack of a floppy is a drawback. I suppose it is if this is the only computer you own. Most people who afford laptops have a desktop machine too. For my Ultralite I have permanently connected a cord to the serial port of my desktop computer. Before leaving on a trip I attach the Ultralite and download the latest files I need onto the Ultralite's 2Mb silicon hard disk. While the 2Mb hard disk seems like a small amount of storage for programs and files, you make it work with compression and a careful selection of files. If you forget something, you leave your machine on at home or in the office with a modem hooked to it and call it up and download the forgotten file. Believe me, it works.

In some ways the limited space works better than a hard disk because it makes you think about what you have. With a hard disk you always assume you have the files you want. I left behind more files and programs when I was using a machine with a 40Mb hard disk than I ever have with the Ultralite.

Hopefully the discipline I achieved by using the Ultralite will pay off when I return to a hard disk machine such as the Texas Instruments or new Sharp 6220. These are the machines everyone should get. Using the super-small 2 1/2" 20Mb hard disk, these machines are the same weight as the Ultralite, but have greater storage. They also have a VGA display and a somewhat better keyboard.

Most observers have been disappointed in NEC's failure to make the Ultralite the true standard for laptops. The company brought out a new Ultralite that weighs more than the original, and I hear that



John C. Dvorak graduated from the University of California. He is a contributing editor of *PC Magazine* and *MacUser*, and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.

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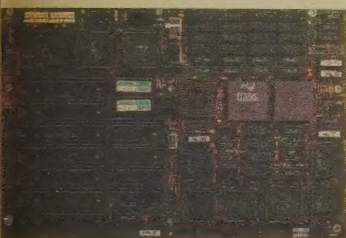
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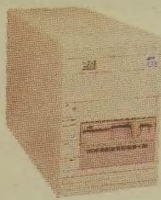
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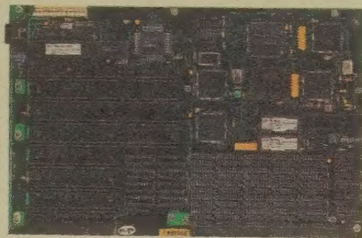
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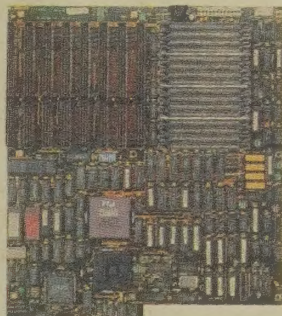
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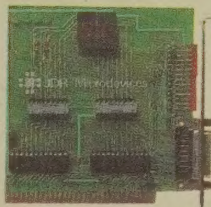
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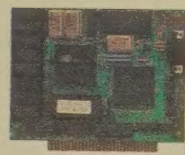
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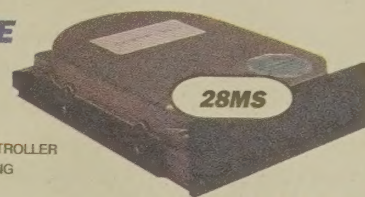


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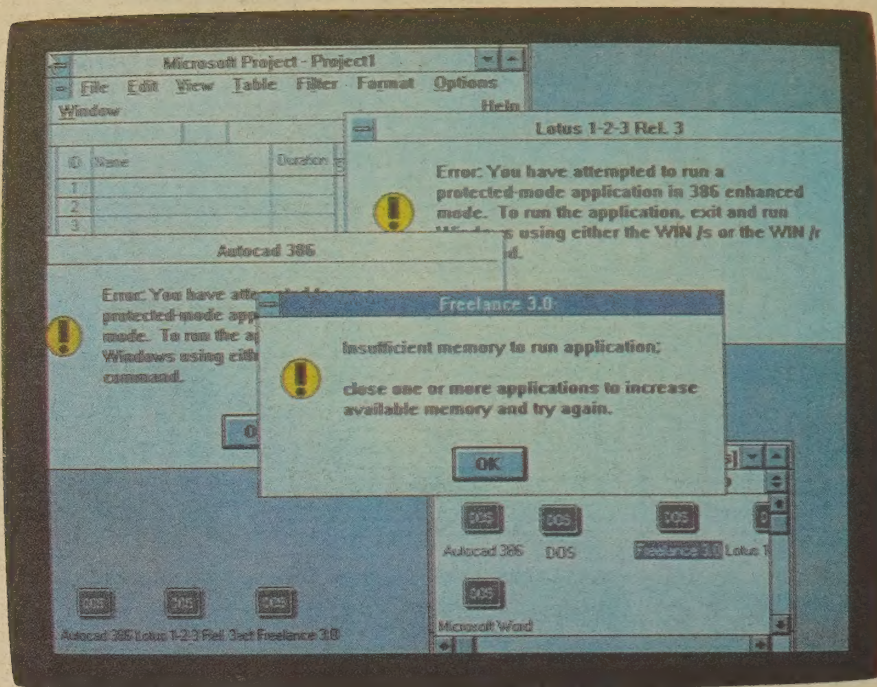
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Is Windows 3.0 the end of DESQviewTM?

Not if you're still using DOS programs.

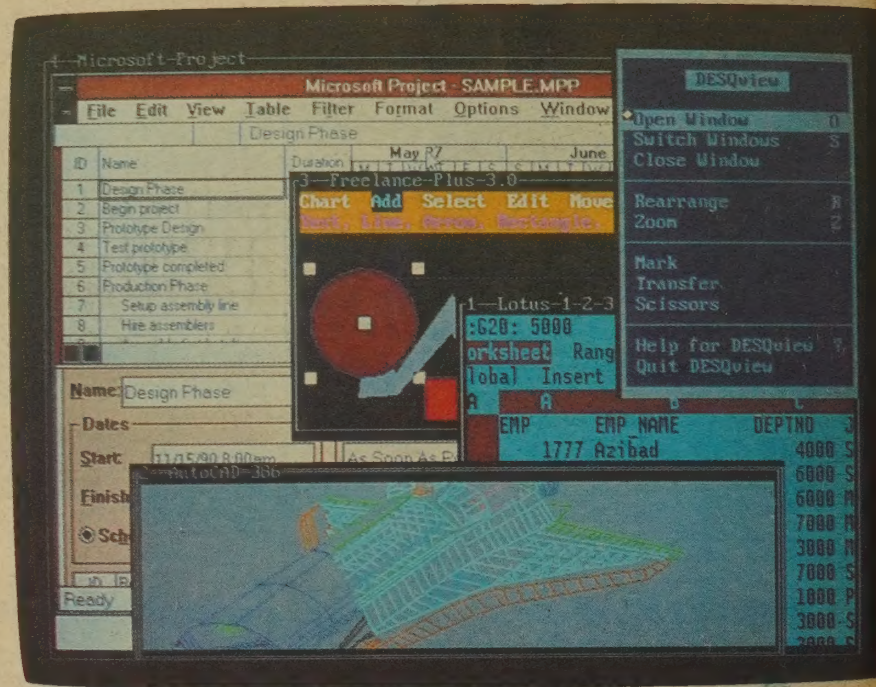


Windows 3.0. The multitasking, windowing environment.

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This comparison was made using a system like the one you might run: Both shots show an ALR FlexCache 33/386 running DOS 3.3 with VGA display adaptor, Novell NetWare v3.01 Rev. A, with IPX/SPX v3.01 Rev A, Microsoft Mouse 7.00, and Microsoft SMARTDrive v3.03 disk cache. Buffers were set to 20. For the Windows screen, we ran Microsoft Windows 3 HMEM.SYS and EMM386.SYS. For the DESQview screen, we ran QEMM 386 v5.1.

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